The Latest News on ENSO and MJO, Recent Weather, Snowpack, Drought Conditions and the March-May 2013 Climate and Drought Outlook for Colorado

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Introduction

1. Neutral-ENSO (El Nino-Southern Oscillation) conditions exist in the Pacific Ocean during the past three months. The outlook is for neutral conditions to continue through at least the Northern Hemisphere summer of 2013.

2. A moderate to strong MJO (Madden-Julian Oscillation) formed in the western tropical Pacific Ocean around Indonesia near the beginning of 2013. Over the next several weeks the MJO slowly migrated eastward along the Equator, losing some of its strength along the way. Around the middle of January, a weakened MJO crossed the International Date line and preceded to move across the eastern tropical Pacific. During the last week of January and first two weeks of February, 2013, as the MJO moved across the eastern equatorial Pacific, a wide area of enhanced precipitation spread from the west coast of the U.S. to the central and southern Rocky Mountains, and then eastward throughout the southern tier states.

3. Western Colorado experienced one of its coldest Januarys on record this year, while eastern sections of the state saw some of the warmest January temperatures in quite some time. January was a very dry month for Colorado. The little precipitation that managed to fall in eastern Colorado during the first three weeks of January, fell as rain due to unseasonably warm temperatures. Not until the last week in January did parts of Colorado see its first significant precipitation in over a month, and mainly in the form of snow. However, by this time, the state's snowpack had suffered, with snow water equivalents well below average statewide.

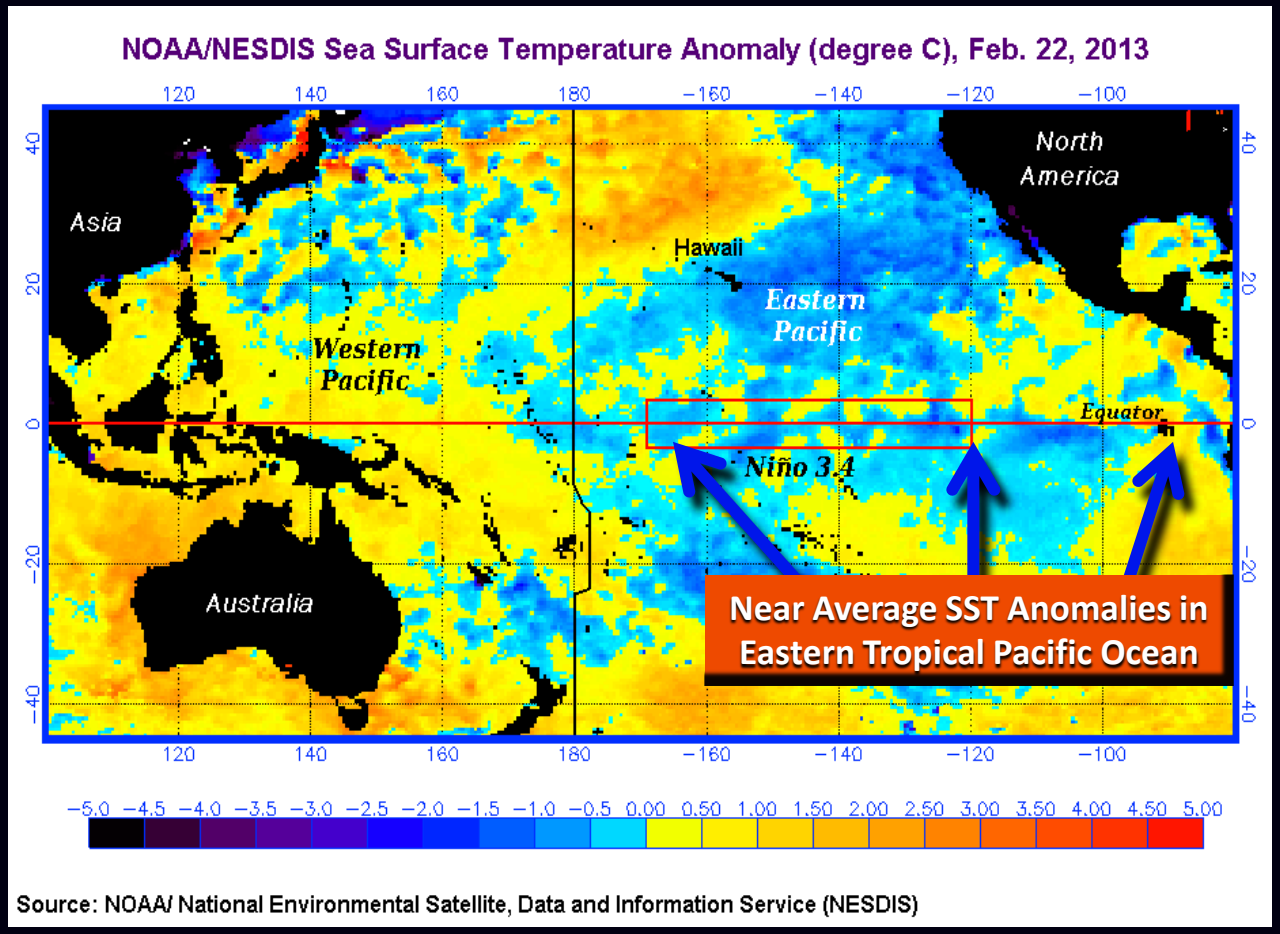
Introduction - continued

4. Soil moistures were also severely depleted in many parts of Colorado during January 2013, and extreme to exceptional drought conditions continued to plague much of the state since late in 2012. The outlook for drought in Colorado during the next three months is for it to persist and possibly intensify.

5. The March 2013 climate outlook from the Climate Prediction Center (CPC) calls for better than a 33 percent chance of below average precipitation across Colorado. CPC's March temperature outlook is less certain. It calls for at least a 33.3 percent chance for above average temperature across the southeast corner of Colorado, better than a 33 percent chance for colder than average temperatures in the far northwest, and an equal or undeterminable chance for above, below or near average temperature for the remainder of the state.

6. For March-May 2013, the outlook from CPC calls for better than a 33 percent chance for below average precipitation, and at least a 33.3 percent chance for above average temperature across Colorado.

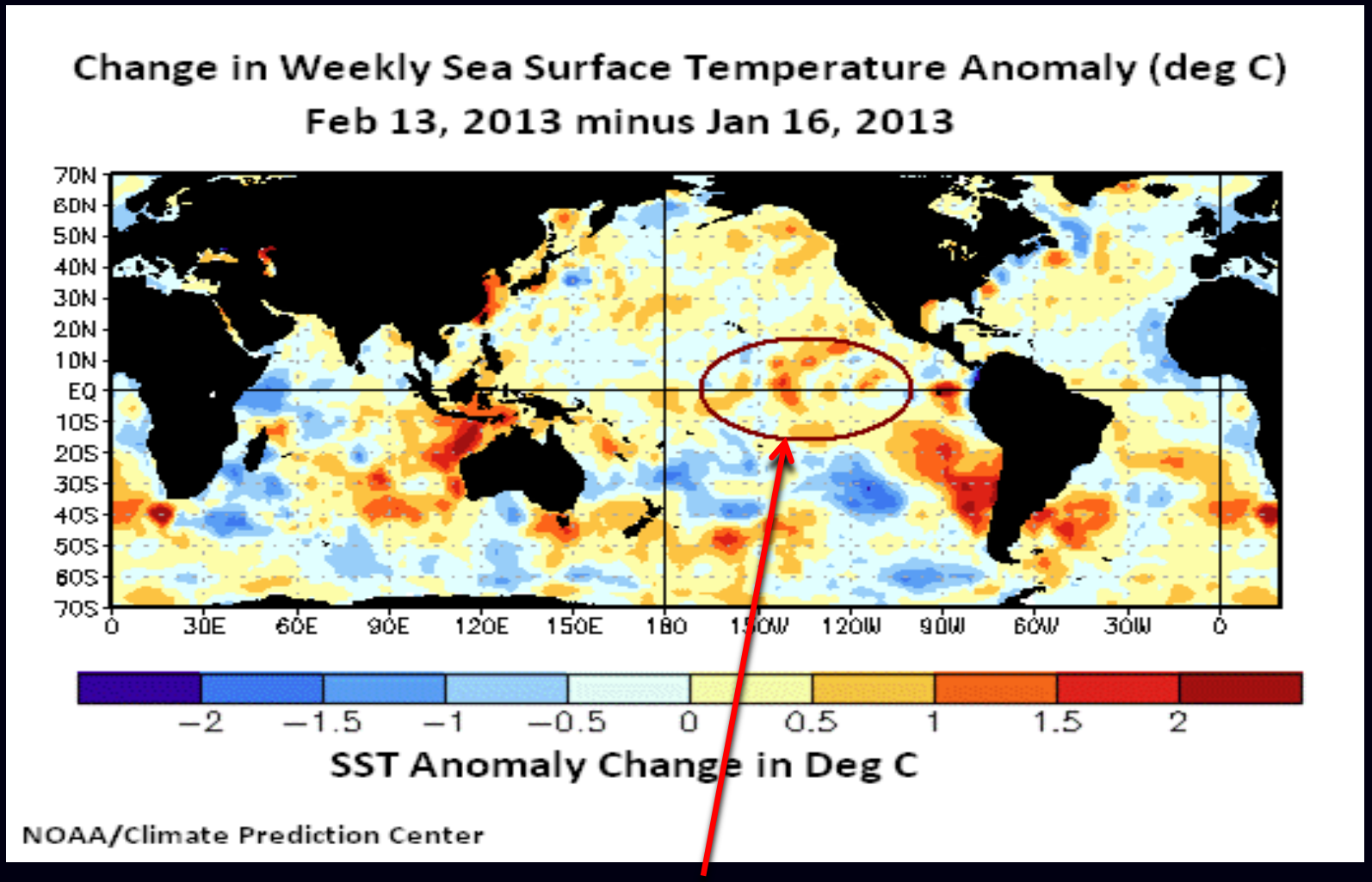
Latest on the Pacific Ocean



Niño 3.4 – The principal region in the eastern Equatorial Pacific Ocean (red outlined box along the equator) used by the Climate Prediction Center (CPC) for monitoring, assessing and predicting the El Niño-Southern Oscillation (ENSO).

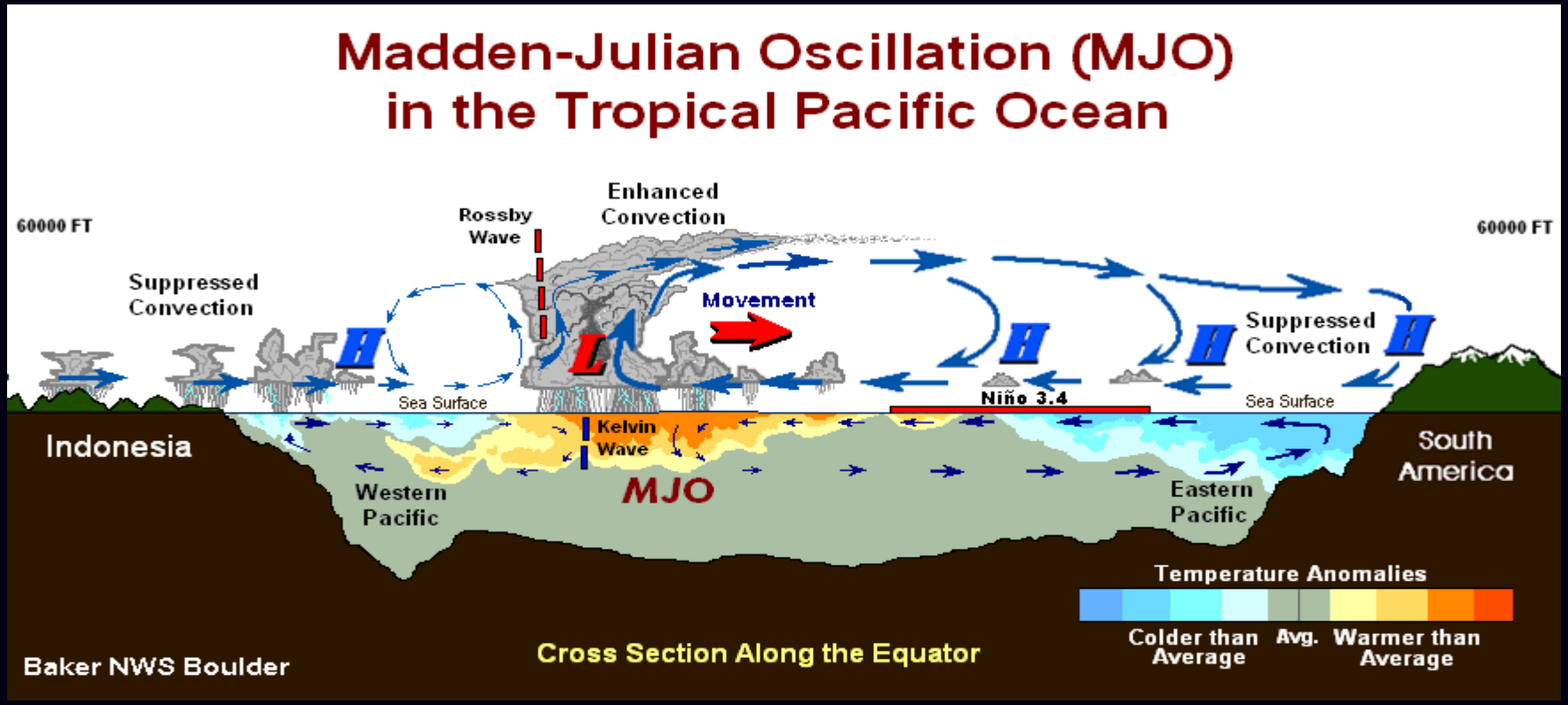
During the latter half of January, 2013, positive SST anomalies appeared in the eastern tropical Pacific in advance of a Madden Julian Oscillation that migrated across the region. Since then, temperature anomalies have returned to near average.

However, pockets of warmer-than-average water continue to stimulate areas of enhanced tropical convection along the equator. In other areas of the eastern equatorial Pacific, SST anomalies have cooled to values associated with a weak La Niña.

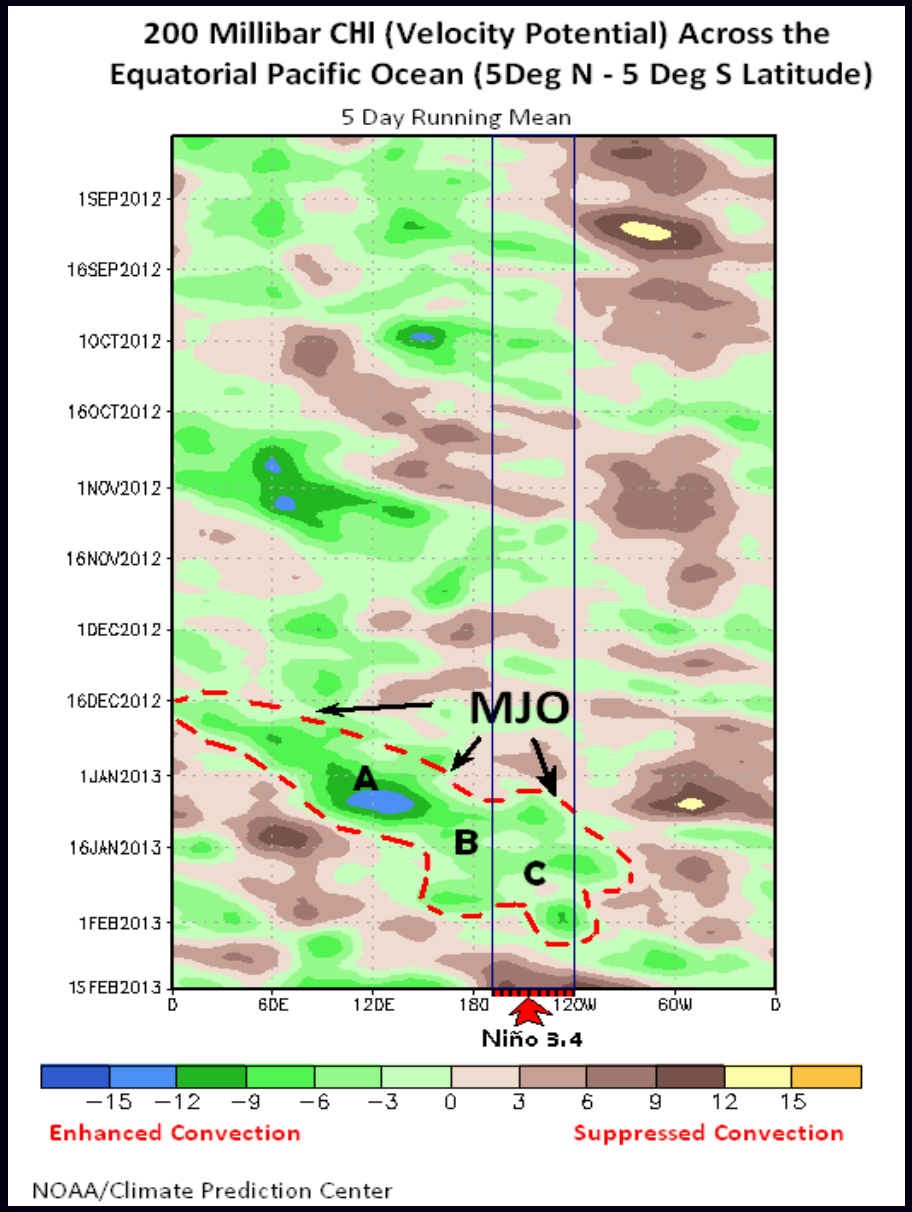


Notice the slight increase in SST anomalies across the eastern half of the equatorial Pacific Ocean during the 30-day period ending February 13, 2013. This positive change in SST anomalies in this part of the Pacific Ocean was in response to an active Madden-Julian Oscillation (MJO) moving through the region.

Madden-Julian Oscillation (MJO) in the Tropical Pacific Ocean



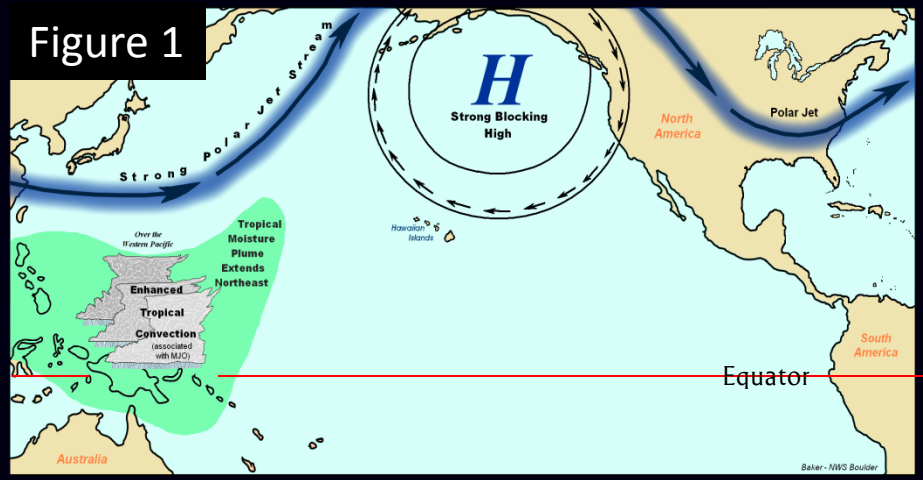
The MJO (also the 30-60 Day Tropical Wave) is a combination of large-scale circulations associated with an oceanic Kelvin Wave and atmospheric Rossby Wave. MJOs of sufficient strength will circle the globe along the equator ordinarily within a span of 30 to 60 days. MJOs are characterized by an eastward propagating complex of enhanced and suppressed tropical convective rainfall observed mainly over the Indian and Pacific Oceans. MJOs moving eastward across the central and eastern tropical Pacific Ocean can have a significant influence on precipitation and circulation patterns in Hawaii and the continental United States. Weather patterns and large scale circulations attributed to MJOs in the eastern tropical Pacific can resemble similar patterns associated with El Niño, but with a much shorter duration (from a few days to a couple weeks). MJOs occur most often during weak La Niñas and ENSO-neutral conditions, and are weakest or absent during El Niño cycles.

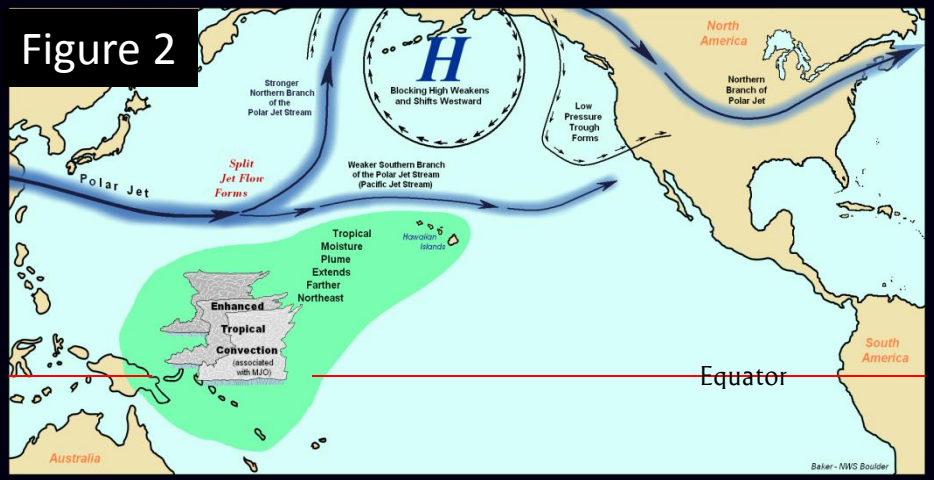


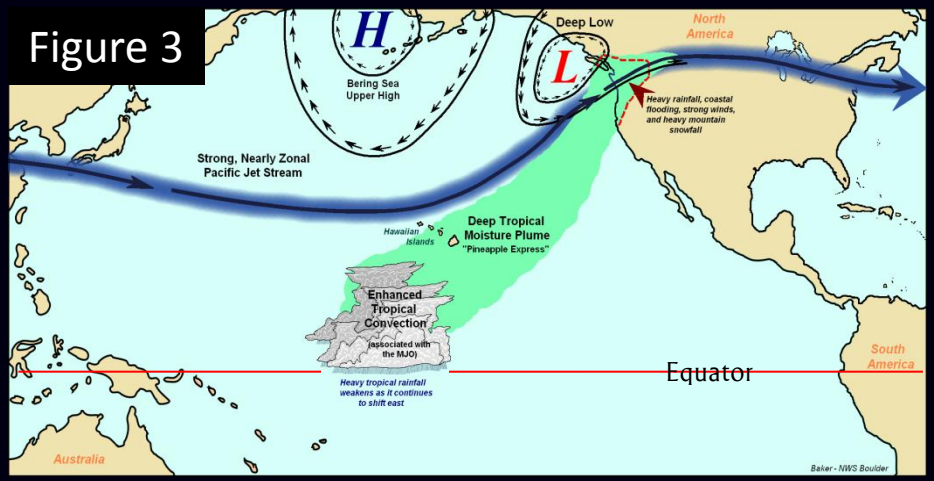
Latest MJO Crossing the Tropical Pacific Ocean

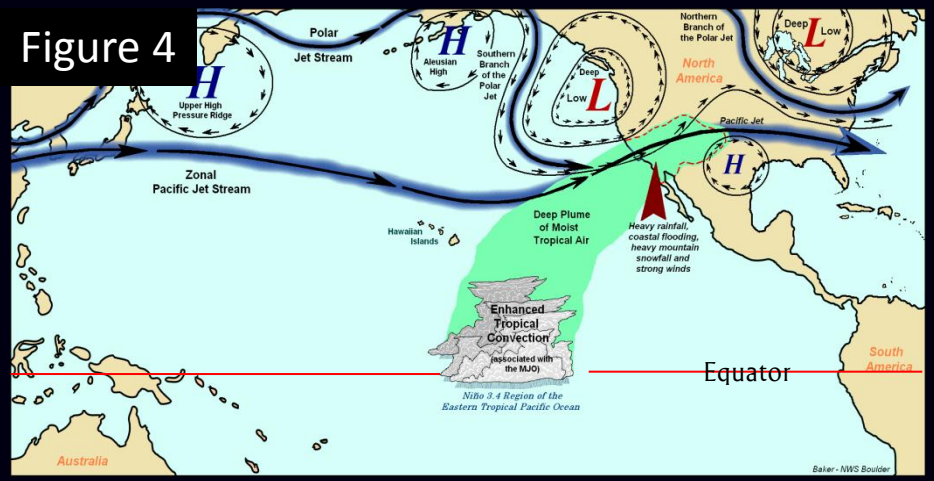
To the left is a time series cross section of the tropical Pacific Ocean (5 deg N to 5 deg S latitude). The green and blue shading represents positive CHI or velocity potential in the upper troposphere (200 millibar level). Positive CHI indicates strong wind divergence aloft commonly associated with deep tropical convection (thunderstorms). This enhanced tropical convection is normally associated with MJOs. Negative CHI (the brown and yellow shades) indicates sinking air and the lack of deep tropical convection.

At point A, a strong MJO was located in the western tropical Pacific near Indonesia in early January 2013. At point B, the MJO had moved to near the Date Line around the middle of January. At point C, an even weaker MJO was passing through the eastern tropical Pacific region known as Niño 3.4 in late January.



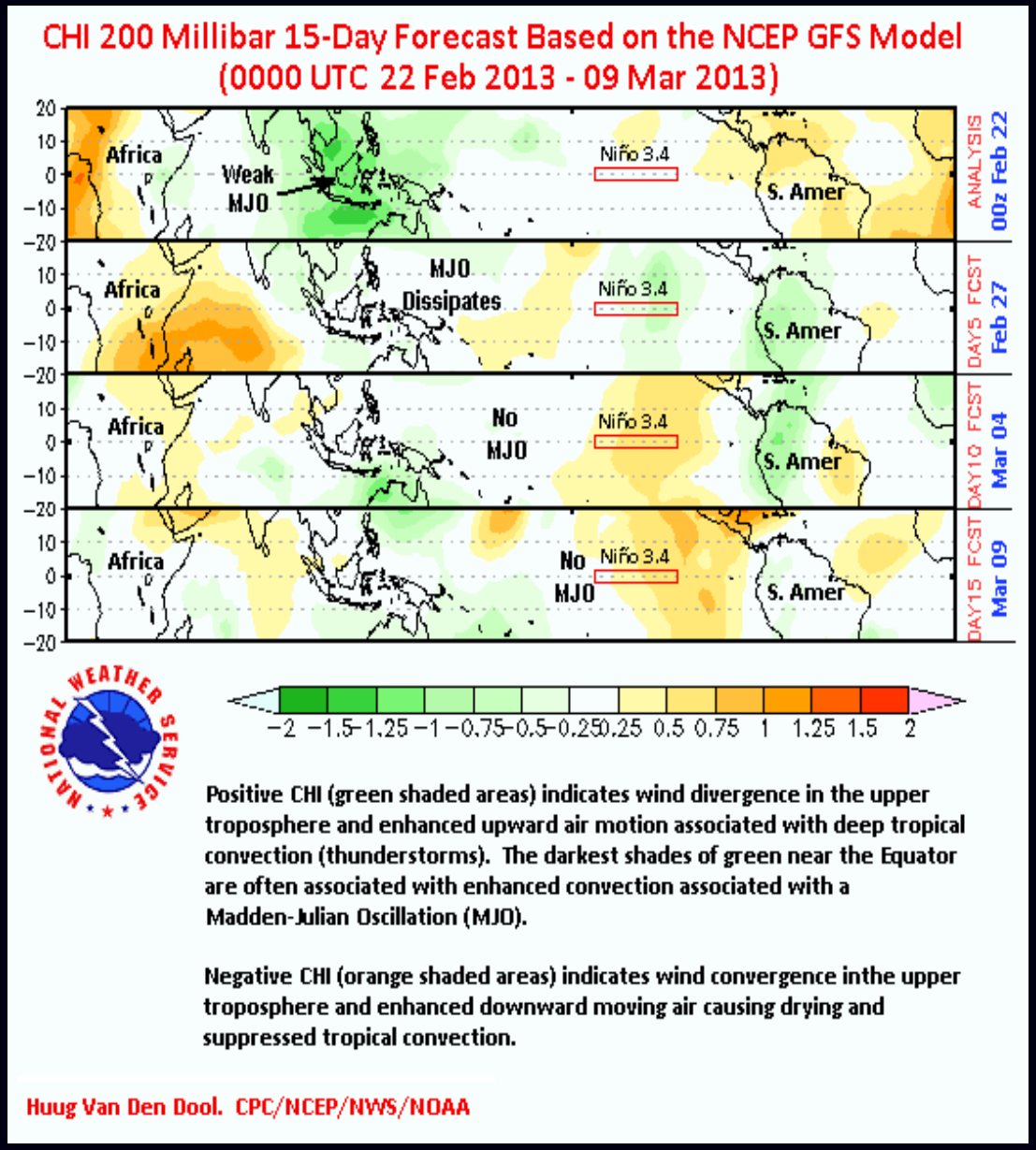






Above is a 4-panel schematic of circulation (jet stream) and moisture patterns associated with enhanced precipitation over the northern Pacific Ocean and western United States associated with an MJO moving east along the Equator. Figure 1 – enhanced convection/rainfall in the western Pacific near Indonesia 14 to 20 days out from the west coast of the U.S. Figure 2 – MJO nearing the International Date Line (180 deg longitude) with its deep plume of tropical moisture extending northeastward towards Hawaii 8 to 13 days out from the west coast. Figures 3 and 4 – during the next 7 days, the MJO moves across the eastern tropical Pacific Ocean. Its deep plume of tropical moisture is carried northeastward by the Pacific Jet up over the U.S. Pacific Northwest, before veering southward over the southwest U.S. as the MJO continues its eastward migration along the Equator.

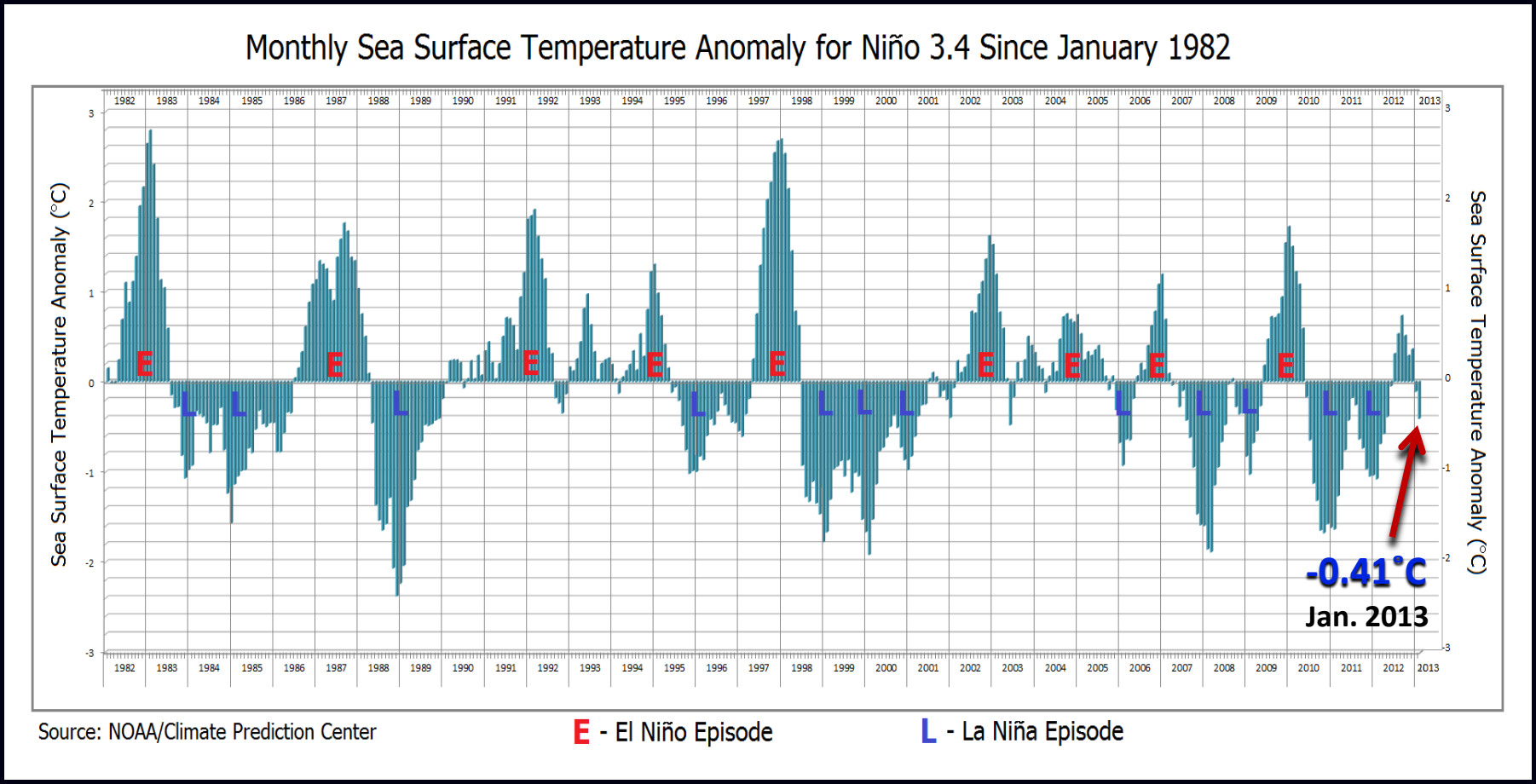
Baker - National Weather Service Boulder, Colorado (Adapted from CPC Schematic)



This latest 15-day forecast from the NCEP GFS model of CHI at 200 millibars indicates a large region of enhanced precipitation from deep convection/ thunderstorms (green shading) over the western tropical Pacific Ocean around 22 February 2013. The model goes on to forecast a rapid demise of convection and its enhanced precipitation and, therefore, an end to the weak MJO in the region near the end of February.

During the next 10 days or so, the GFS model forecasts a lack of CHI aloft, and therefore no enhanced convection associated with a MJO anywhere along the equator in the Pacific Ocean.

Status of ENSO – El Niño/Southern Oscillation



The monthly SST anomaly for ENSO 3.4 has continued to trend negative (-0.41C) since December of 2012, after being in weakly positive territory during the months of September through November of 2012.

The Oceanic Niño Index (ONI) for Niño 3.4

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2000	-1.7	-1.5	-1.1	-0.9	-0.8	-0.7	-0.6	-0.5	-0.5	-0.6	-0.8	-0.8
2001	-0.7	-0.6	-0.5	-0.3	-0.2	-0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.3
2002	-0.2	0.0	0.1	0.3	0.5	0.7	0.8	0.8	0.9	1.2	1.3	1.3
2003	1.1	0.8	0.4	0.0	-0.2	-0.1	0.2	0.4	0.4	0.4	0.4	0.3
2004	0.3	0.2	0.1	0.1	0.1	0.3	0.5	0.7	0.7	0.7	0.7	0.7
2005	0.6	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.0	-0.2	-0.5	-0.8
2006	-0.9	-0.7	-0.5	-0.3	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.0
2007	0.7	0.3	-0.1	-0.2	-0.3	-0.3	-0.3	-0.6	-0.9	-1.1	-1.2	-1.4
2008	-1.5	-1.5	-1.2	-0.9	-0.7	-0.5	-0.3	-0.2	-0.1	-0.2	-0.4	-0.7
2009	-0.9	-0.8	-0.6	-0.2	0.1	0.4	0.5	0.6	0.7	1.0	1.4	1.6
2010	1.6	1.4	1.1	0.7	0.2	-0.3	-0.8	-1.2	-1.4	-1.5	-1.5	-1.5
2011	-1.4	-1.3	-1.0	-0.7	-0.4	-0.2	-0.2	-0.3	-0.6	-0.8	-1.0	-1.0
2012	-0.9	-0.7	-0.5	-0.3	-0.1	0.0	0.1	0.3	0.4	0.6	0.2	**-0.3**

NOAA/CPC Last Update 02-04-13

The ONI during the latest three month climate season (NDJ) was --0.3; an indication of neutral ENSO conditions in the eastern tropical Pacific Ocean.

El Niño : ONI higher than +0.45
Neutral ENSO : ONI of -0.45 to +0.45
La Niña: ONI lower than -0.45

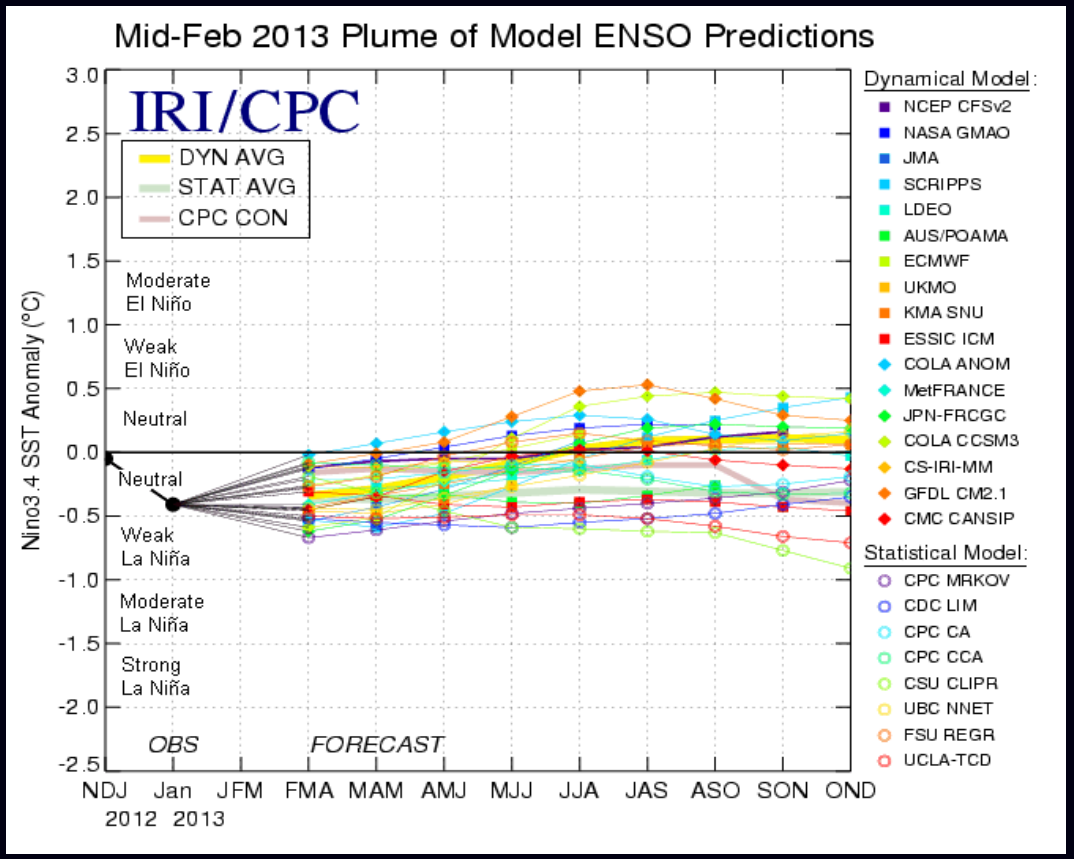
The ONI is based on sea surface temperature (SST) departures from average in the Niño 3.4 region of the eastern tropical Pacific Ocean. It is the principal measure used by NOAA's Climate Prediction Center (CPC) for monitoring, assessing and predicting El Niño/Southern Oscillation (ENSO.)

ONI is defined as the three-month running mean SST departures in the Niño 3.4 region of the Pacific.

ONI is used to place current ENSO and non-ENSO events into a historical perspective.

CPC's operational definitions of El Niño and La Niña are keyed to the ONI index.

For historical purposes, warm and cold phases of ENSO (the red and blue colored numbers) are defined when the threshold is met for a minimum of 5 consecutive over-lapping 3-month seasons.



Forecast SST Anomalies (deg C) for the Eastern Pacific Region Niño 3.4

Seasons (2013-2014)	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND
Average, Dynamic Models	-0.3	-0.2	-0.1	0	0.1	0.1	0.1	0.1
Average, Statistical Models	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Average, All Models	-0.3	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1

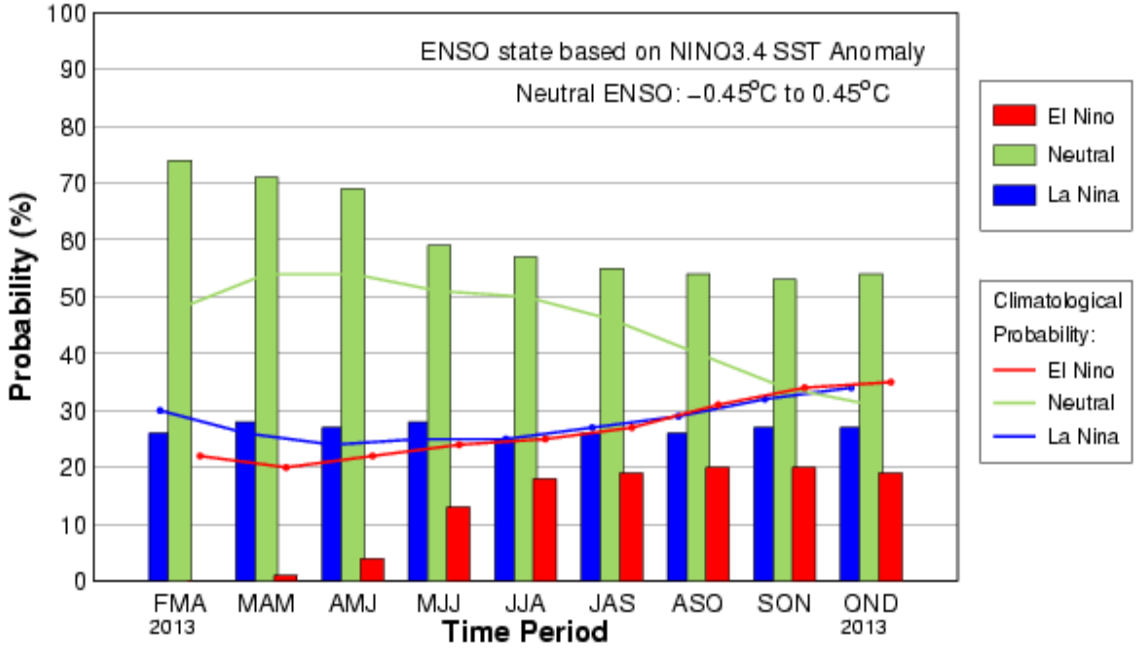
Source: The International Research Institute for Climate and Society (IRI) - Feb 20 2013

The Forecast for ENSO

A large majority of the dynamical and statistical climate models have continued to forecast non-ENSO or neutral conditions in the Pacific Ocean through the Northern Hemisphere summer of 2013.

The table at the lower left contains the cumulative average of sea surface temperature anomalies (SSTa) forecasted by 17 dynamical models and 8 statistical models, and a cumulative average for all 25 models for overlapping 3-month climate seasons through the October-December (OND) 2013 climate season.

An SST anomaly greater than -0.45˚C and lower than +0.45˚C indicates neutral ENSO conditions.

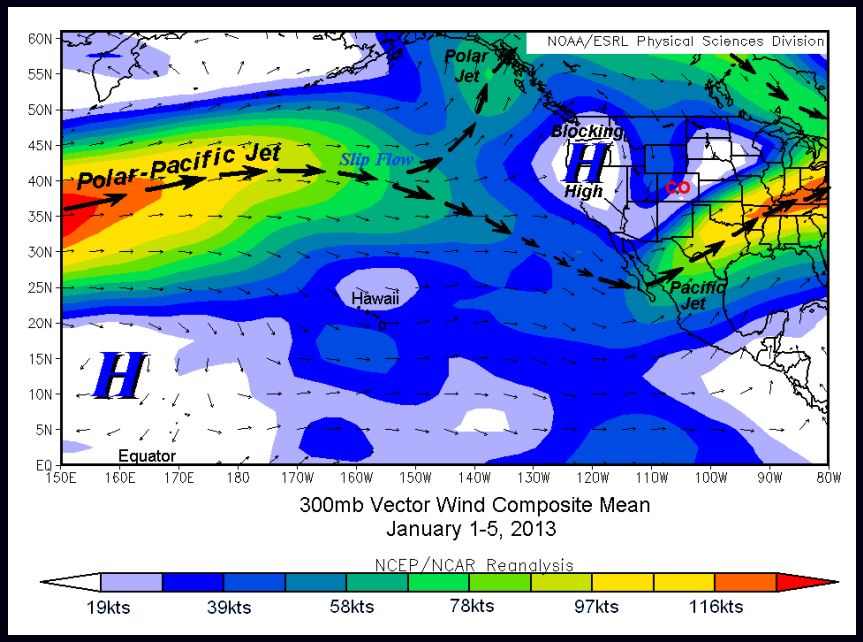


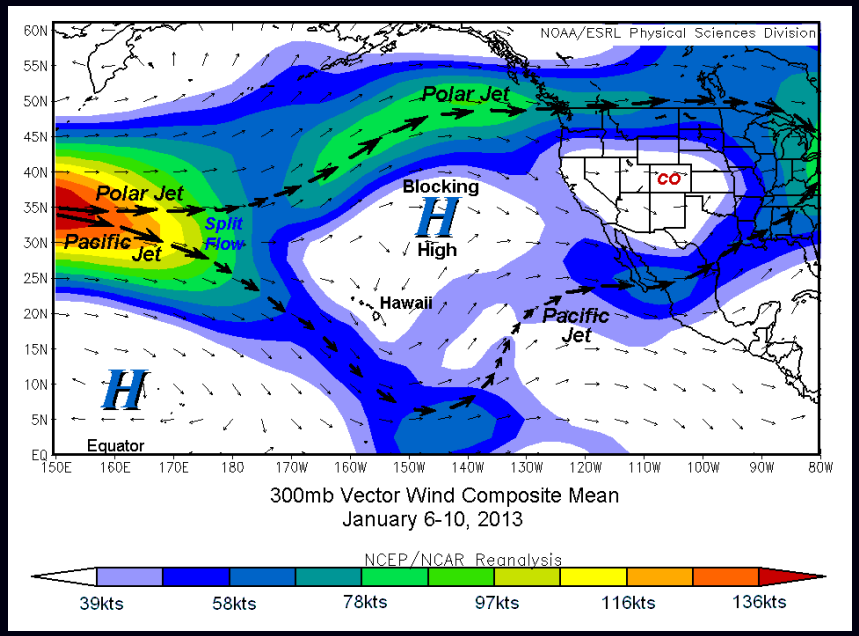
IRI Probabilistic ENSO Prediction for NINO3.4 Region

Season	La Niña	Neutral	El Niño
FMA 2013	26%	74%	~0%
MAM 2013	28%	71%	1%
AMJ 2013	27%	69%	4%
MJJ 2013	28%	59%	13%
JJA 2013	25%	57%	18%
JAS 2013	26%	55%	19%
ASO 2013	26%	54%	20%
SON 2013	27%	53%	20%
OND 2013	27%	54%	19%

Probabilistic ENSO Forecast for Nine Overlapping 3-Month Climate Seasons Through October-December of 2013.

Neutral ENSO conditions are predicted to dominate through at least the summer season of 2013.

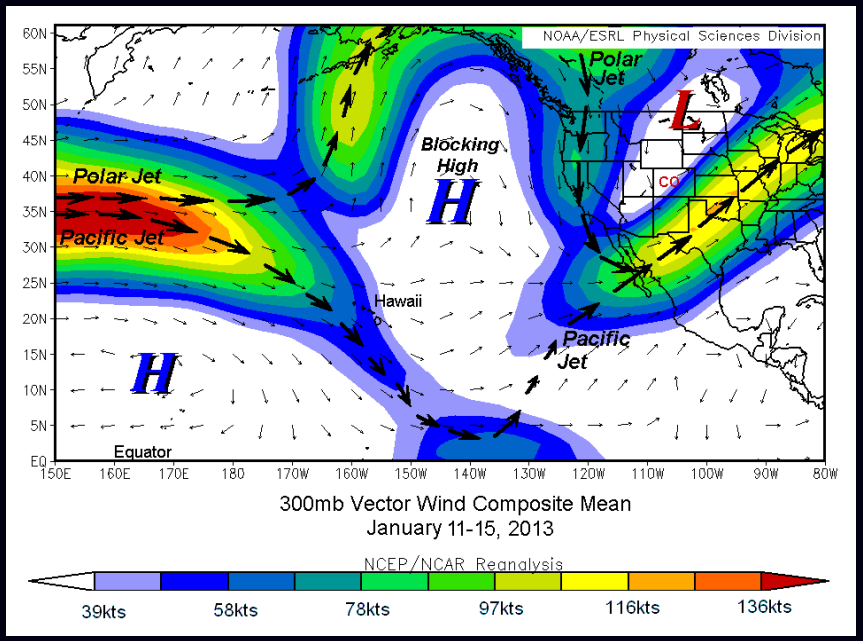




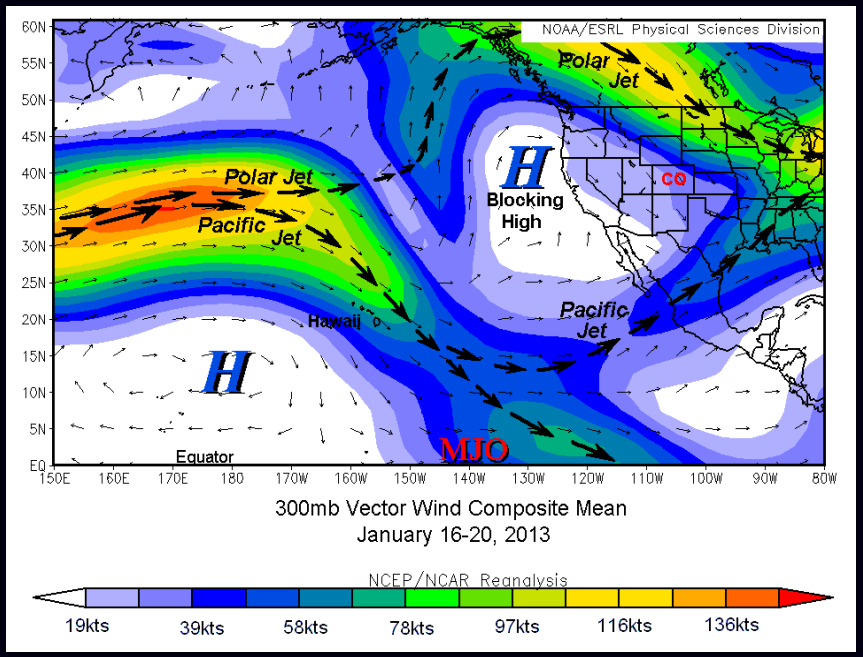
The Influence of the Jet Stream On Recent Weather Patterns

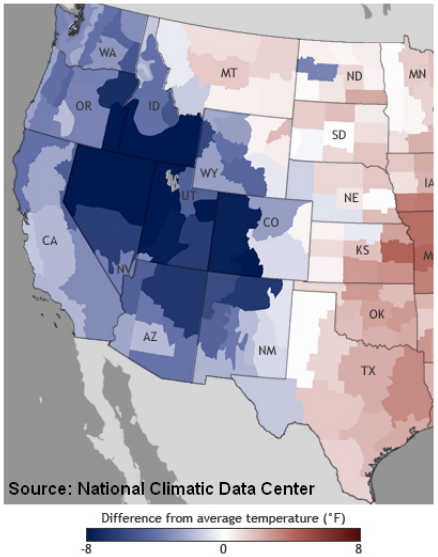
The next several composite maps depict the mean 300 millibar (approximately 30,000 feet ASL) vector wind over the Pacific Ocean and North America. This altitude is often the location of the jet stream (the river of strong winds that may be thought of as the storm track circling the globe.) Its influence on local and regional weather patterns can be significant.

During the first ten days of January 2013, a powerful jet stream coming off the Asian continent–a combination of the colder and stronger Polar Jet and the warmer and often wetter Pacific Jet – separate as they pass over the Pacific Ocean. The two jets continue to diverge as they approach a strong, often stationary ridge of high pressure off the west coast of North America. This split in the flow around this “blocking high” causes storms to pass to the north and south of Colorado (labeled CO).



During the next ten days of January 2013, the west coast high pressure ridge grew stronger as it extended up over the Gulf of Alaska. This caused the northern-most Polar Jet Stream to buckle southward over the western U.S, resulting in several days of abnormally cold and snowy weather for the Great Basin and the western slope of Colorado. Western Colorado, particularly valley locations, remained in the grip of a bitterly cold airmass, and cloaked in a blanket of icy, dense fog for days.

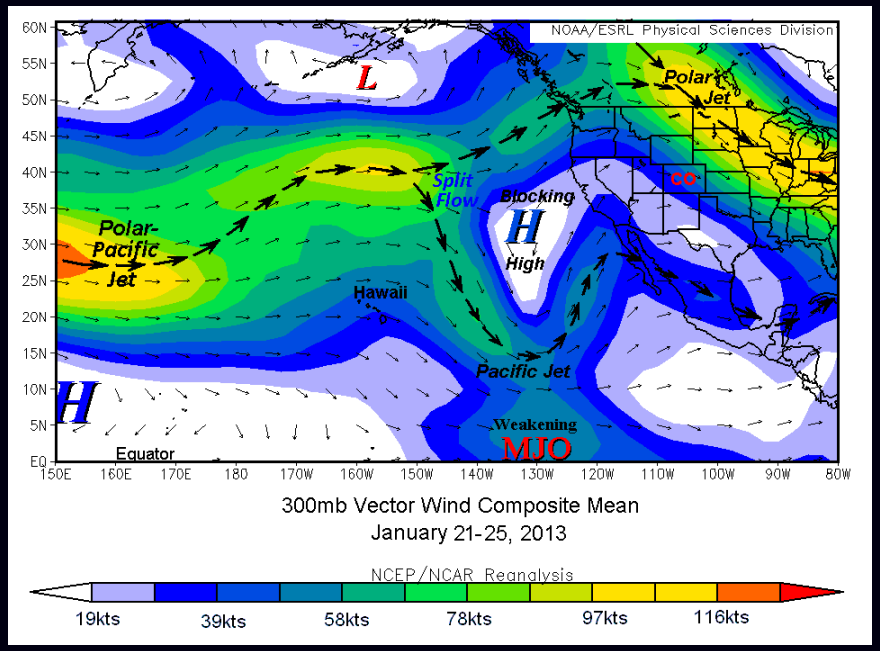


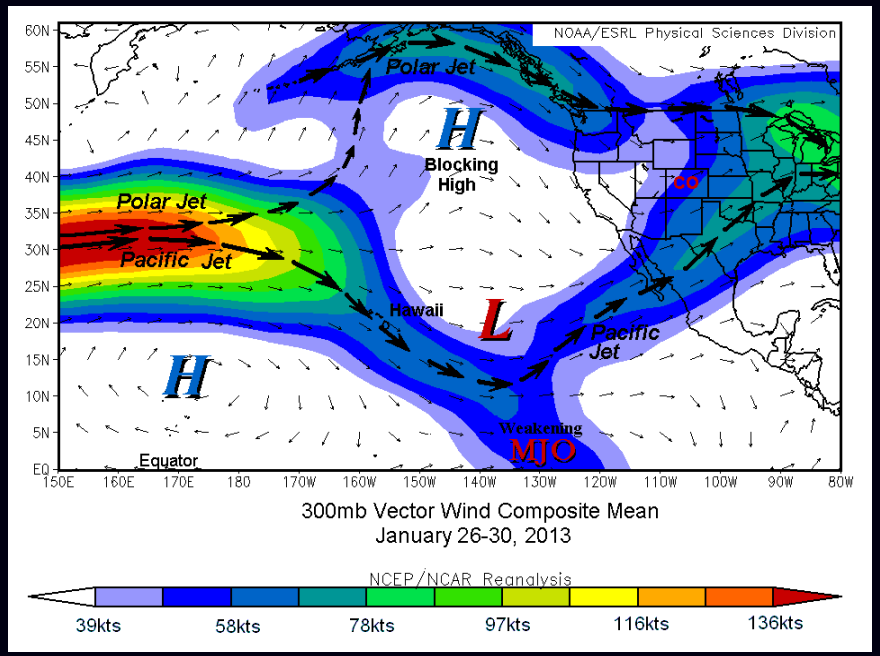


The map to the left shows the temperature difference from the 1981-2010 average for the western continental United States during the month of January, 2013. The red and blue shaded areas indicate temperatures up to 8 degrees Fahrenheit warmer or cooler than average, respectively.

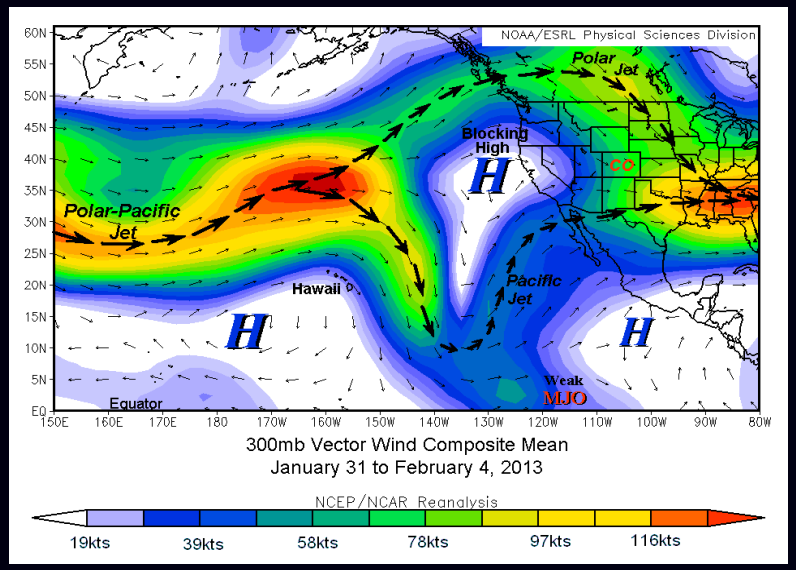
The area primarily west of the Continental Divide experienced below to much below average temperature during the month. The largest negative departures from average were observed in the central Great Basin and on the west slope of Colorado. Eastern Colorado did not escape the cold as temperatures, overall, were also slightly below average for January.

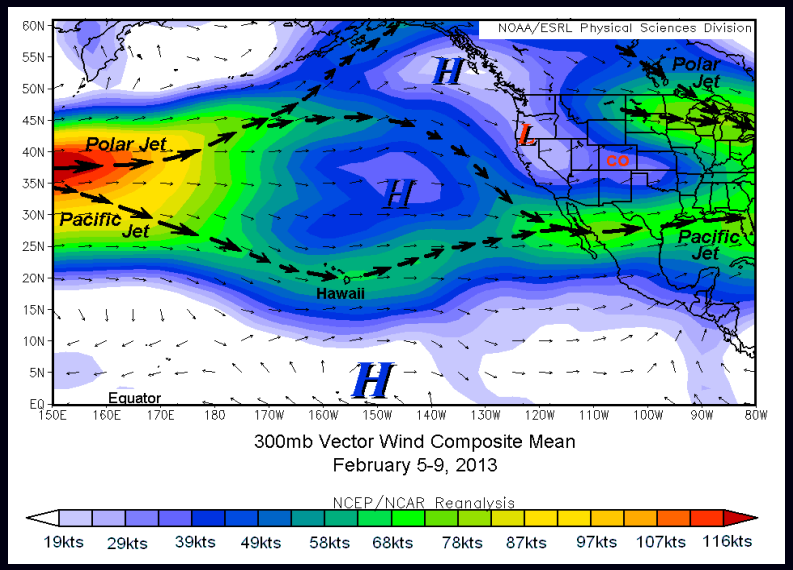
Map and captions were adapted from the January 2013 National Climate Report from the National Climtic Data Center (NCDC) and were presented in the February 13, 2013 issue of the ClimateWatch Magazine, available at Climate.gov.

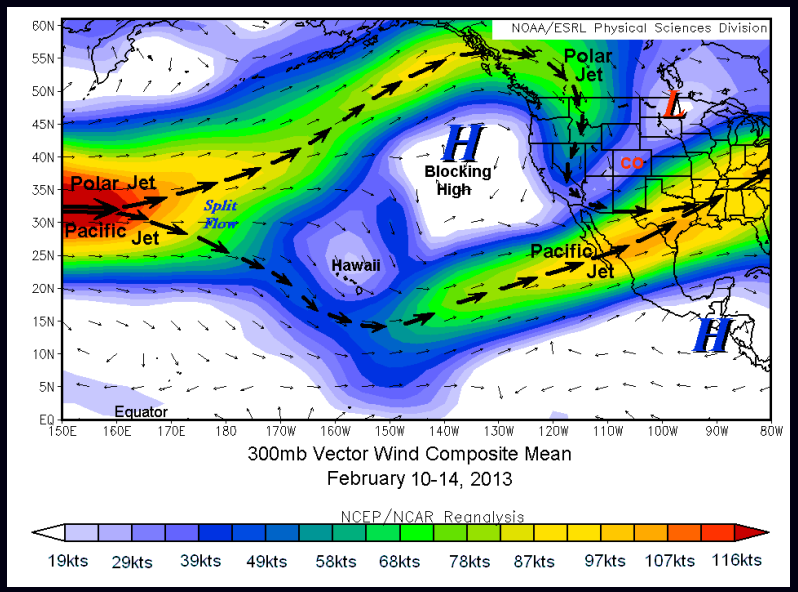


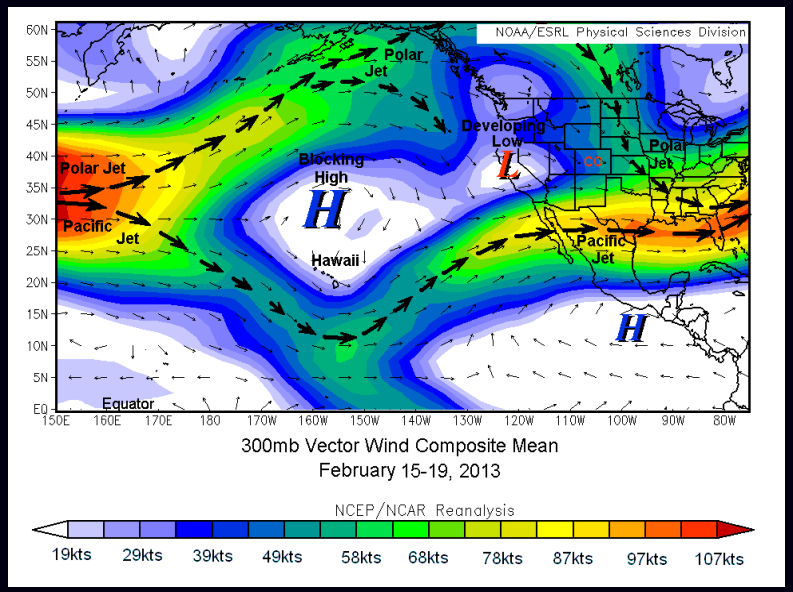


During the second half of January 2013, the dominant high pressure ridge over the eastern mid-latitude Pacific Ocean continued to gain strength as it slowly returned to its former position just off the west coast of the United States. This shift in the ridge caused to Polar and Pacific Jets to position well north and south of Colorado, respectively. However, during the final week of January, the warmer and wetter Pacific Jet shifted northward closer to Colorado as a weak MJO passed to the south along the equator. This northward shift in the Pacific Jet coincided with a few days of light to moderate precipitation across southern and eastern Colorado.

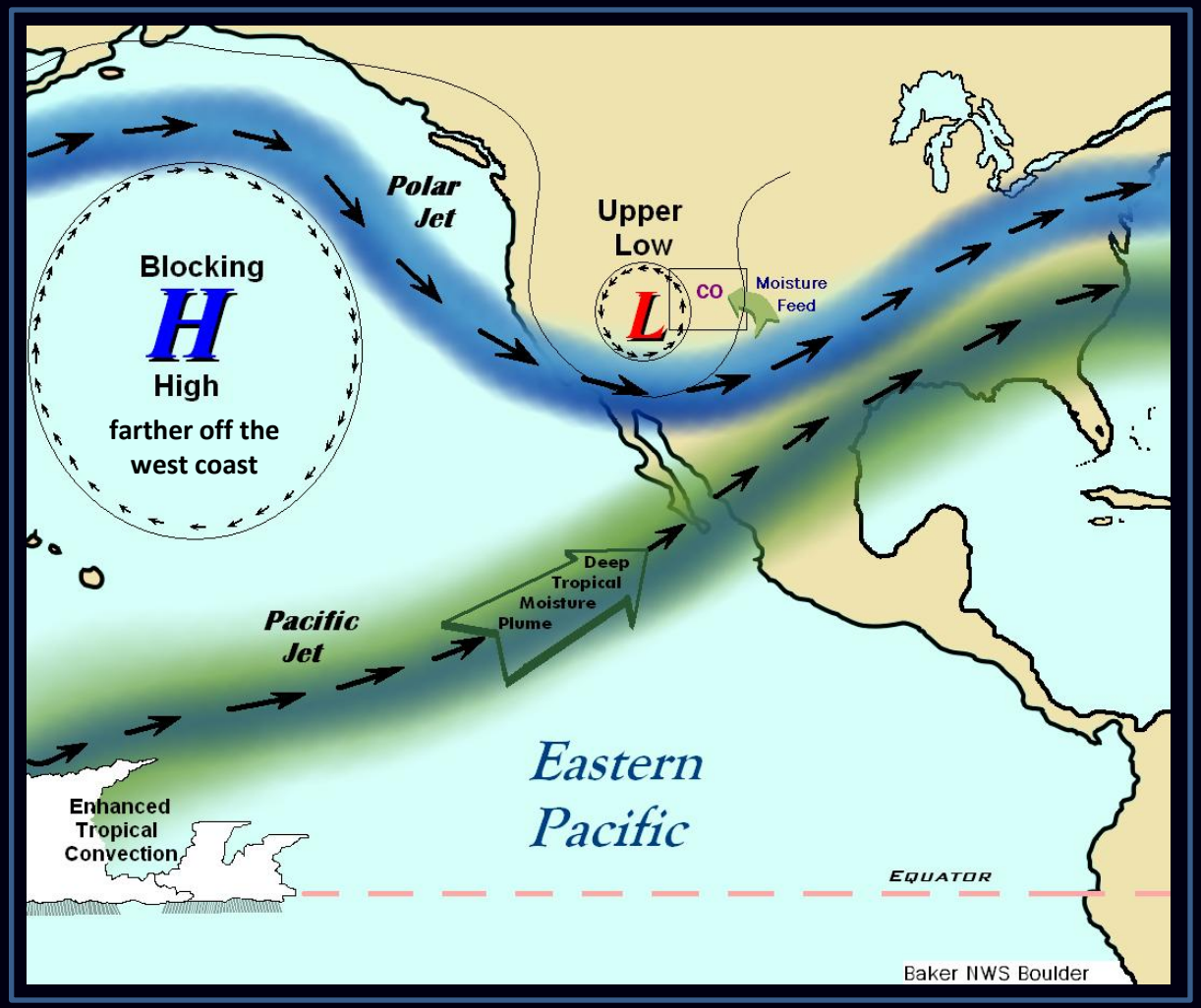








Finally, during the first half of February, 2013, the strong blocking ridge of high pressure along the west coast of the U.S. weakened and slowly migrated westward over eastern Pacific. This allowed the Polar and Pacific Jet Streams to gain greater influence on precipitation and wind patterns in Colorado and across the U.S.



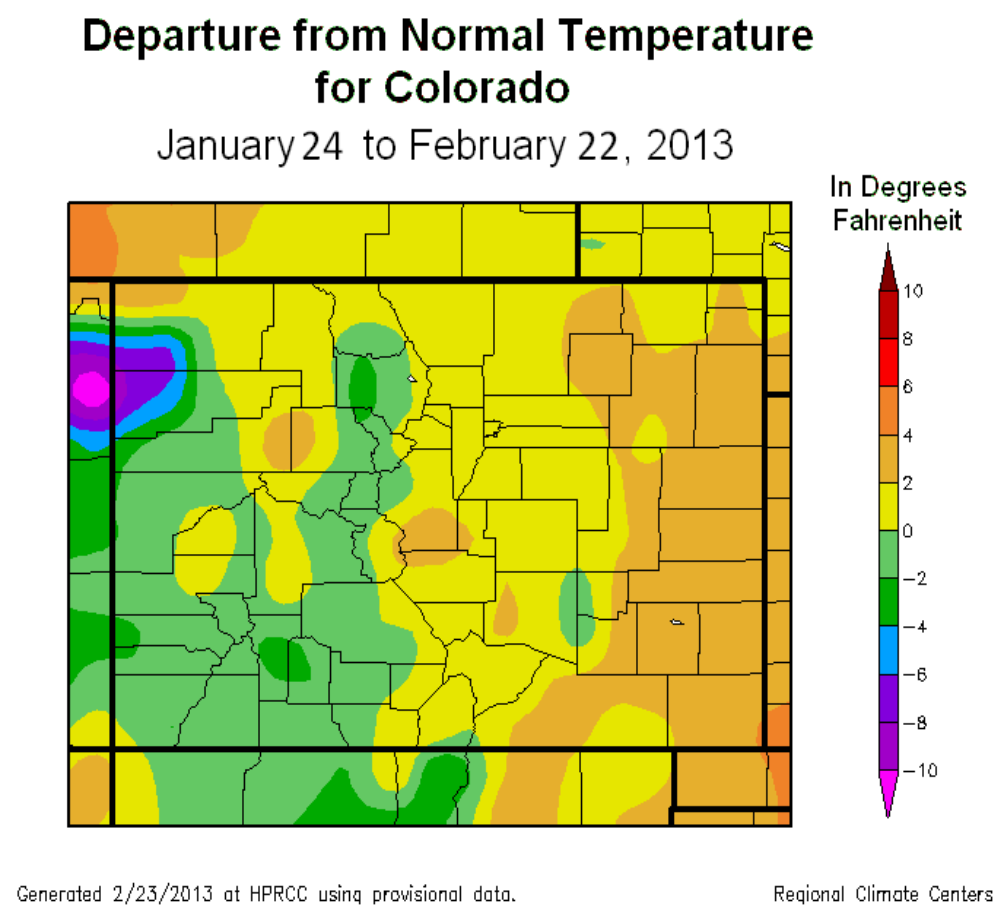
A latitudinal shift in the Polar and Pacific Jet Stream pattern over North America in recent days is largely to blame for the recent exceptionally wet weather along the U.S. Gulf Coast, the record precipitation across the country's heartland, and the beneficial snowfall across southern and eastern Colorado.

The Polar Jet provided the cold air and the Pacific jet the moisture necessary to produce the wet and stormy weather.

Latest indications, however, point to a break down in this circulation pattern, and thus a return to drier and warmer conditions for Colorado and the southwest U.S. in the coming weeks.

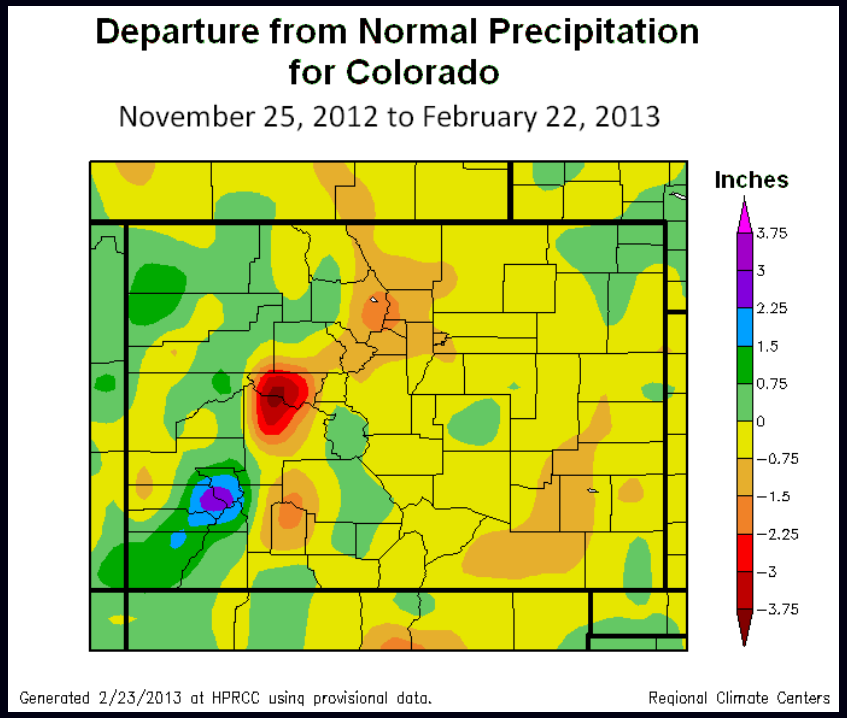

LARAMIE
HIAWATHA
KIMBALL
CRAIG
STERLING
C O L O R A D O
RANGELY
KREMMLING
WRAY
DENVER
GRAND JUNCTION
FLAGLER
MOAB
MONTROSE
CHEYENNE WELLS
PUEBLO
DOVE CREEK
LAMAR
DURANGO
ALAMOSA
SPRINGFIELD
TRINIDAD
FARMINGTON
Recent
Weather, Snowpack
and Drought
Conditions
Across Colorado

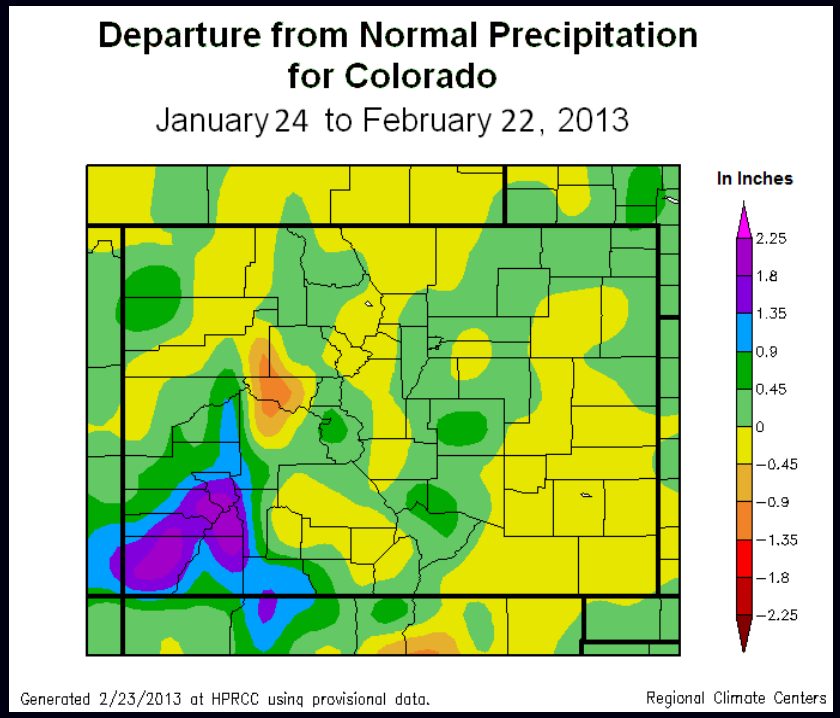
Temperature Departures for the 30-Day Period Ending February 22, 2013



After an abnormally cold January, particularly in western Colorado (as referred to earlier in this slide presentation), temperature departures across much of Colorado returned to within +/- 4 degrees F of zero during the 30-day period ending February 22, 2013. However, portions of northwest Colorado did not partake in this return to normalcy as temperatures remained well below average. An extensive snow cover in northeast Colorado was largely to blame as it continued to chill the already cold air that gripped the region during January.

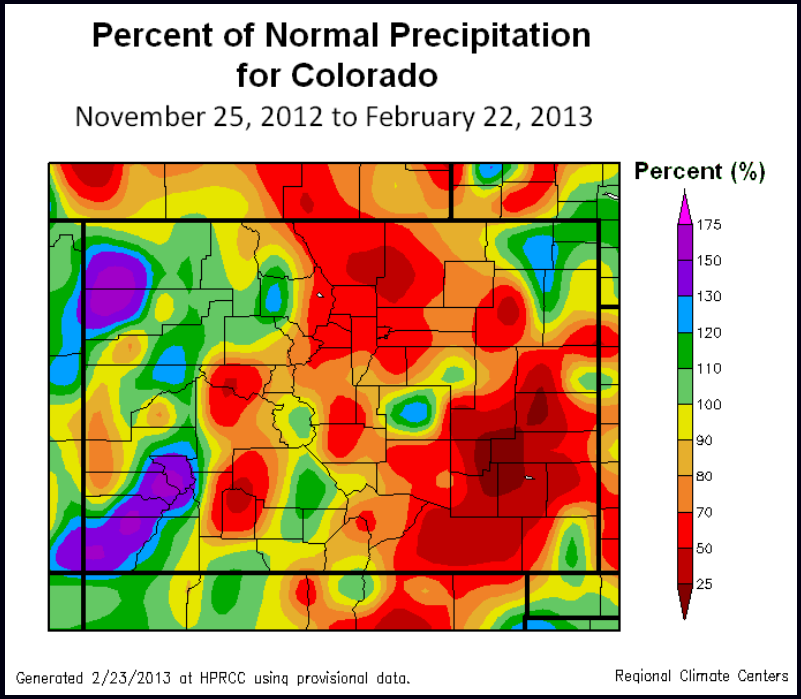
Departure from Normal Precipitation for the 30-Day and 90-Day Periods Ending February 22, 2013

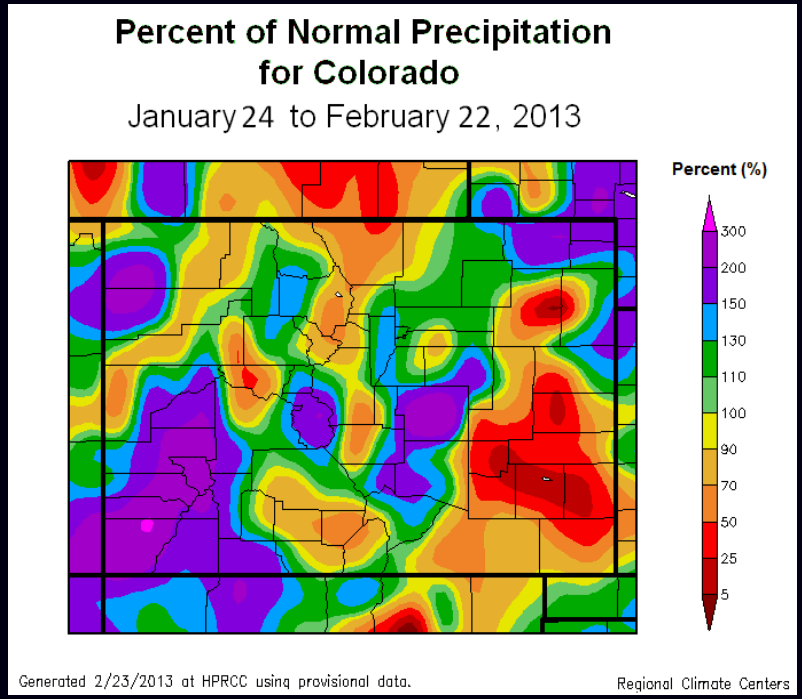




After little or no precipitation during much of December 2012 and the first part of January 2013, a shift in the large scale circulation pattern over the western United States returned precipitation bearing storms to parts of Colorado. The prevailing storm track during late January and the first part of February favored southern and eastern Colorado. During the 30-day period ending 22, 2013, southwest Colorado caught the bulk of this precipitation as a prevailing southwesterly flow carried moisture laden air up from deep convection associated with a weak MJO moving along the equator. Eastern Colorado benefitted as well from this flow pattern as small negative precipitation departures were replaced by larger positive departures. Note, these departure maps do not take into consideration the significant snowfall that occurred in eastern Colorado on February 24-25, 2013.

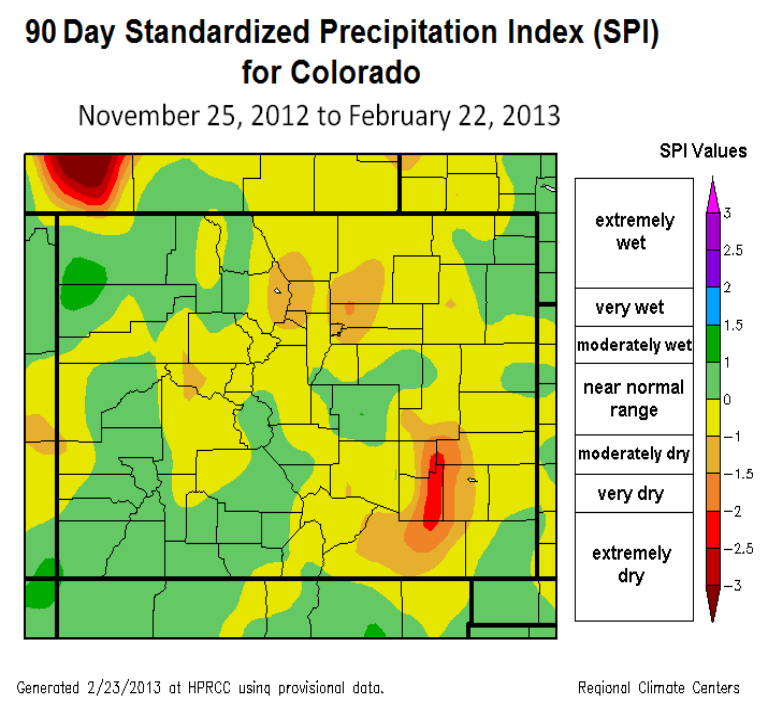
Percent of Normal Precipitation for the 30-Day and 90-Day Periods Ending February 22, 2013

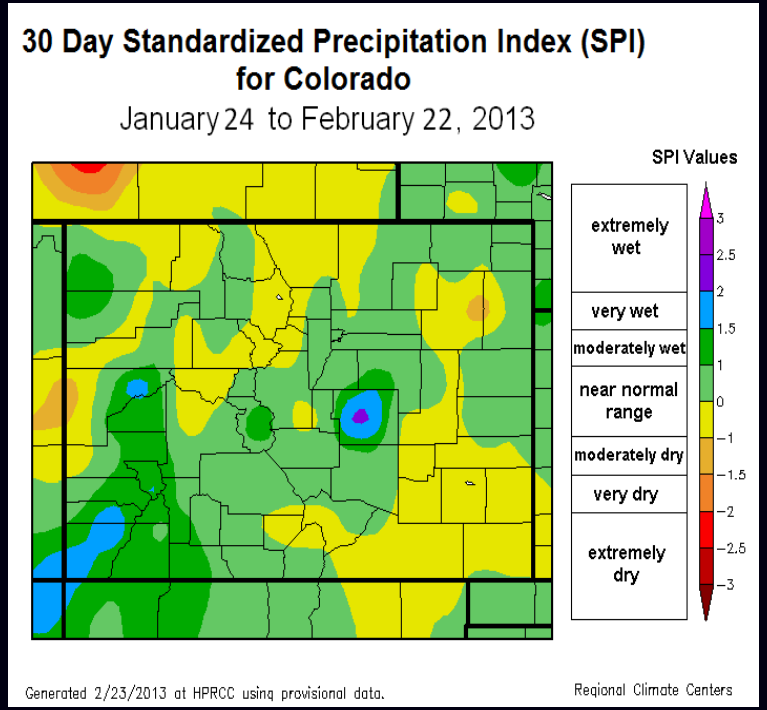




The above maps reveal a sizable change in the percent of normal precipitation across Colorado during the 90-day period ending February 22, 2013. Areas experiencing the greatest percent increase in precipitation during this period include the San Juan Mountain region in southwest Colorado, the upper Arkansas River Valley in and around Chaffee County, lower portions of the Arkansas River Basin in southeast Colorado, the Front Range Mountains and the plains of northeast Colorado. North central Colorado in and around Grand County also saw a noteworthy increase in the percent of precipitation during this 90-day period. Keep in mind that these maps also do not take into account the significant snowfall that occurred in eastern Colorado on February 24-25, 2013.

Standardized Precipitation Index for the 30-Day and 90-Day Periods Ending February 22, 2013

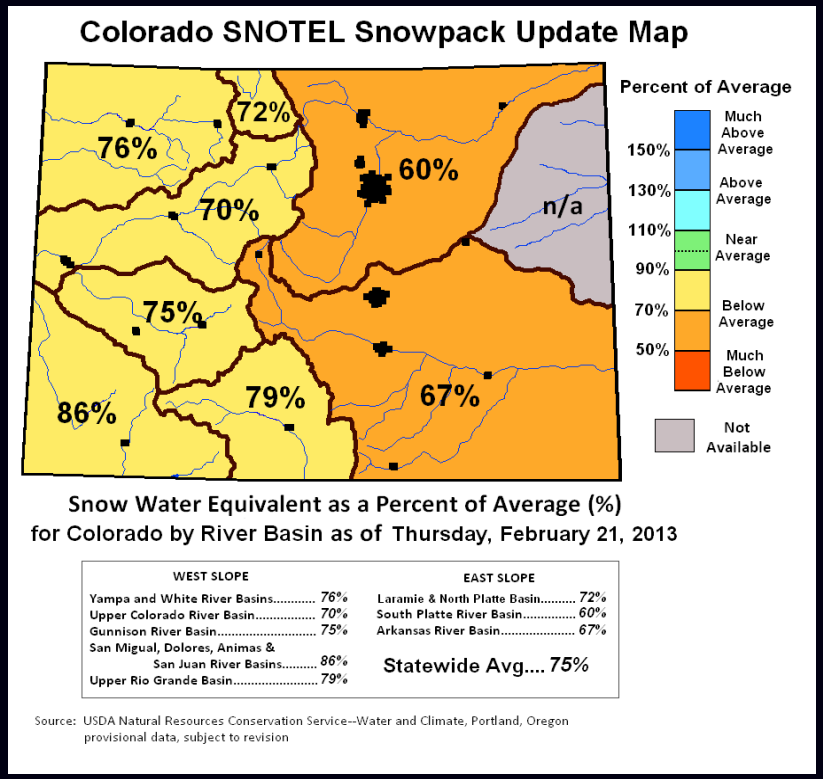


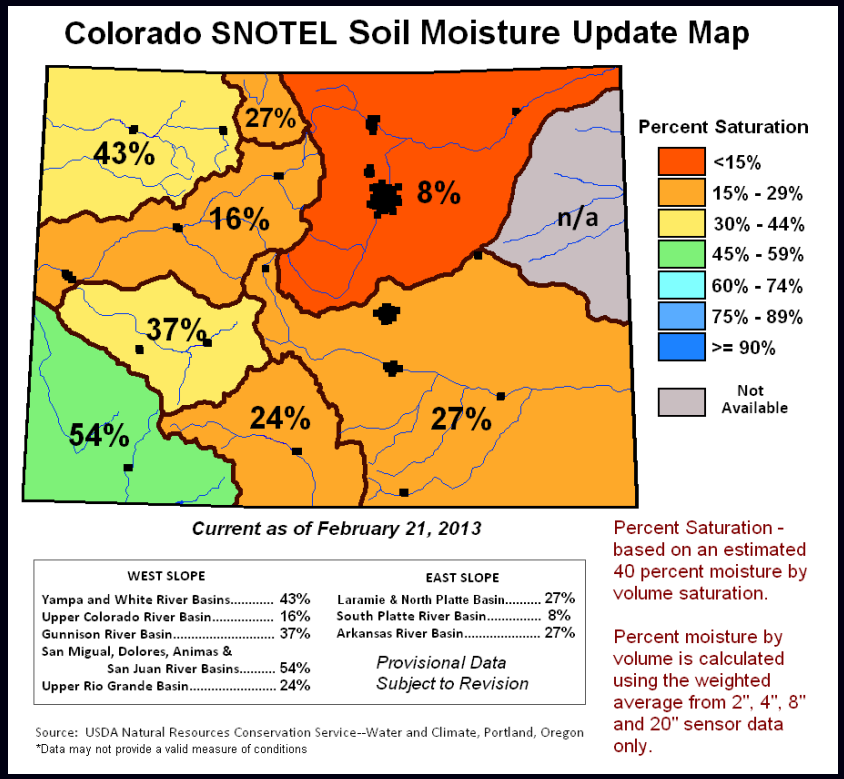


The greatest improvement in soil moisture levels in Colorado during the 90-day period ending February 22, 2013, based solely on the standardized precipitation index (SPI), occurred within the Arkansas River Basin in southeast Colorado. It's here that soil conditions went from extremely dry to near average levels. Notable improvement in soil moistures also occurred along the Front Range in northeast Colorado and throughout much of southwest Colorado. In eastern Colorado soil moistures will undoubtedly improve with the heavy snowfall that occurred on February 24-25, 2013.

The SPI was developed to monitor potential short term agricultural and long-term hydrological drought conditions. The SPI is a probability index that considers only precipitation.


Colorado Snowpack
As of
February 21, 2013





Snowpack in Colorado as of February 21, 2013 remains below average with a statewide average at 75 percent. Snow water equivalents in basins west of the Continental Divide range from a low of 70 percent of average in the Upper Colorado River Basin, to a high of 86 percent of average in the Four Corners region of southwest Colorado. Snow water equivalents east of the Divide were even lower.

Snow water equivalents cannot tell the whole story. Soil moistures based on SNOTEL data further reinforce the degree of dryness present across Colorado as of February 21st. For instance, data indicate exceptionally low soil moisture content (8 percent of average) within the South Platte River Basin. However, the recent heavy snowfall within this basin should certainly improve soil moisture levels in this part of Colorado.

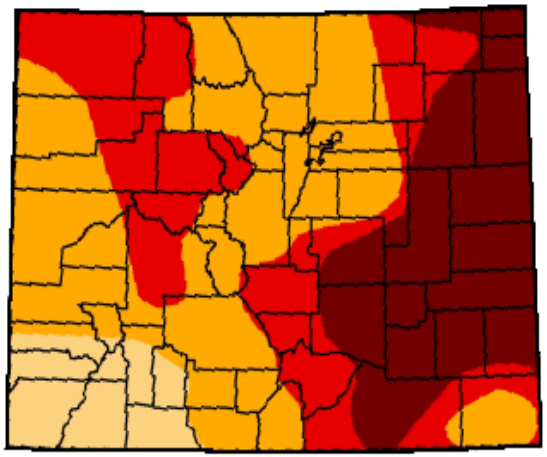
U.S. Drought Monitor

February 19, 2013
Valid 7 a.m. EST

Colorado

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	91.30	51.14	24.92
Last Week (02/12/2013 map)	0.00	100.00	100.00	91.30	50.99	24.92
3 Months Ago (11/20/2012 map)	0.00	100.00	100.00	91.52	48.56	12.56
Start of Calendar Year (01/01/2013 map)	0.00	100.00	100.00	95.06	53.47	13.48
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	100.00	61.75	16.89
One Year Ago (02/14/2012 map)	30.48	69.52	41.07	10.67	0.21	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

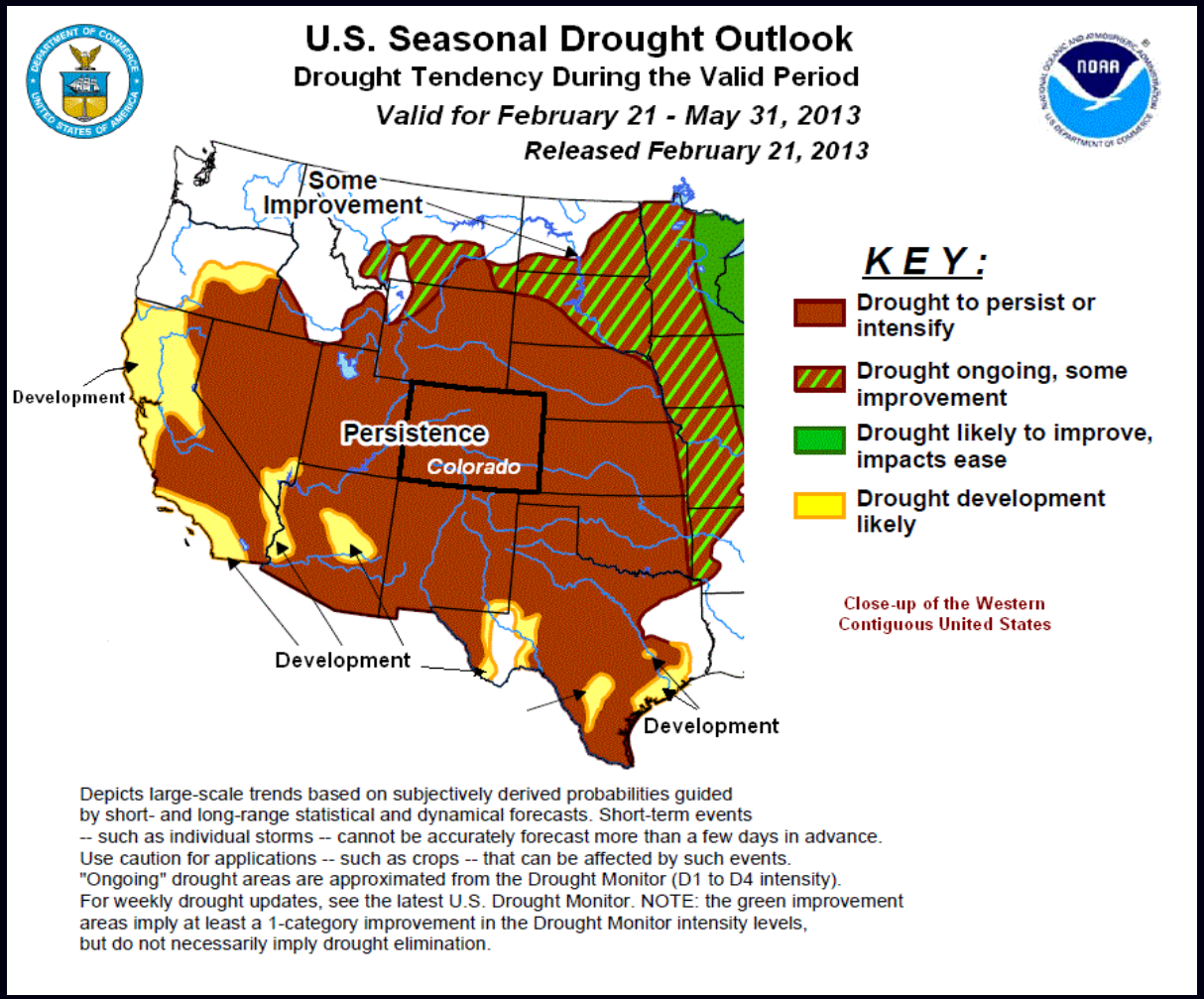
http://droughtmonitor.unl.edu

USDA National Drought Mitigation Center

Released Thursday, February 21, 2013
Brian Fuchs, National Drought Mitigation Center

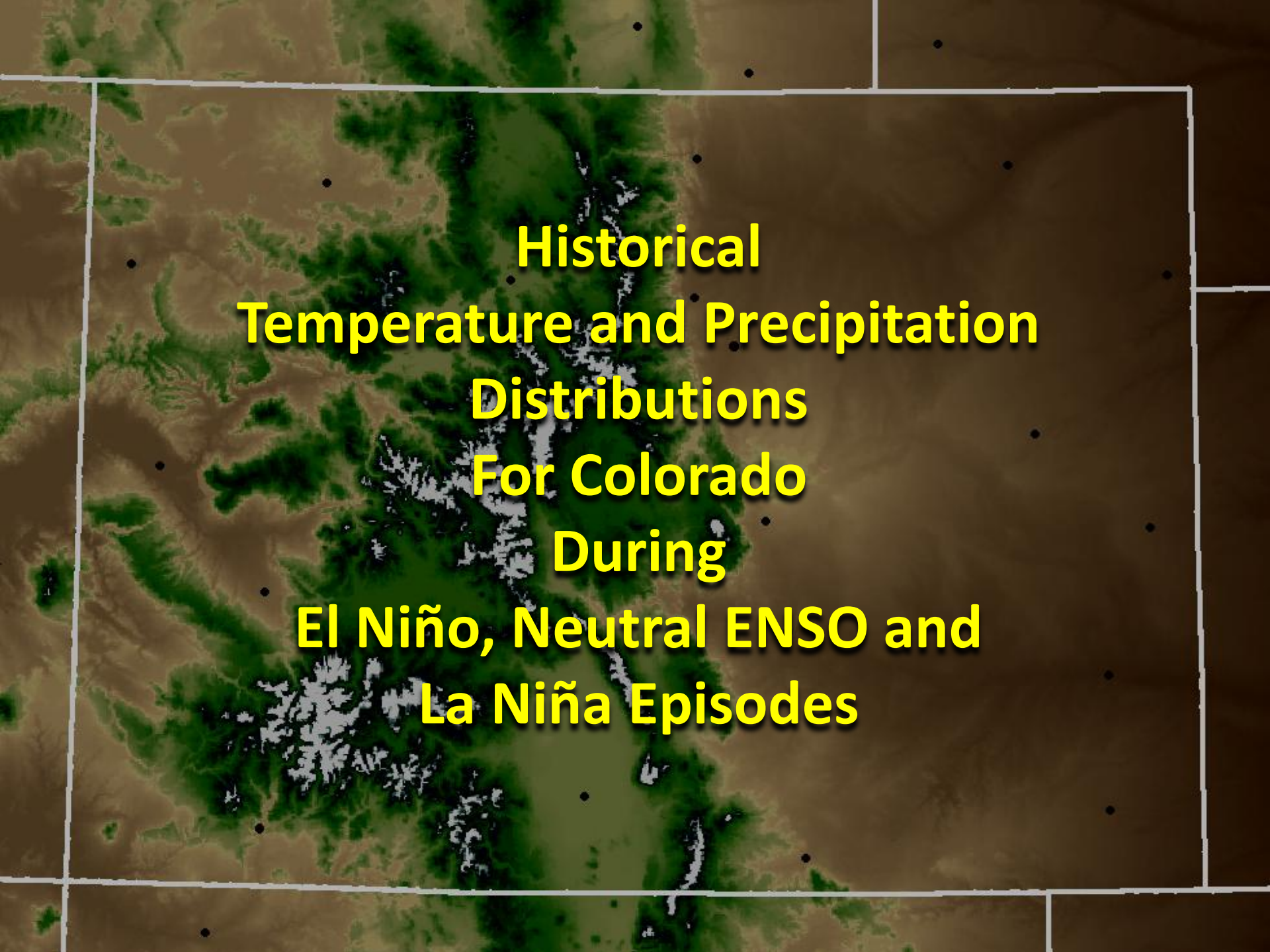
As of February 19, 2013, extreme (D3) to exceptional (D4) drought conditions covered much of Colorado, with the eastern plains suffering the most severe drought conditions.

In recent weeks, there has been some improvement in drought conditions in Colorado, particularly across southwest corner of the state due to recent precipitation. The state's northeast plains adjacent to the Front Range also saw some improvement in drought conditions. This includes the greater Denver metropolitan area.



The latest seasonal drought outlook issued by NOAA's Climate Prediction Center valid for the period February 21 to May 31, 2013 calls for drought conditions to persist or possibly intensify across nearly all of the western United States. Unfortunately, this includes Colorado.

For an outlook for the entire U.S., go to www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif.


Historical
Temperature and Precipitation
Distributions
For Colorado
During
El Niño, Neutral ENSO and
La Niña Episodes

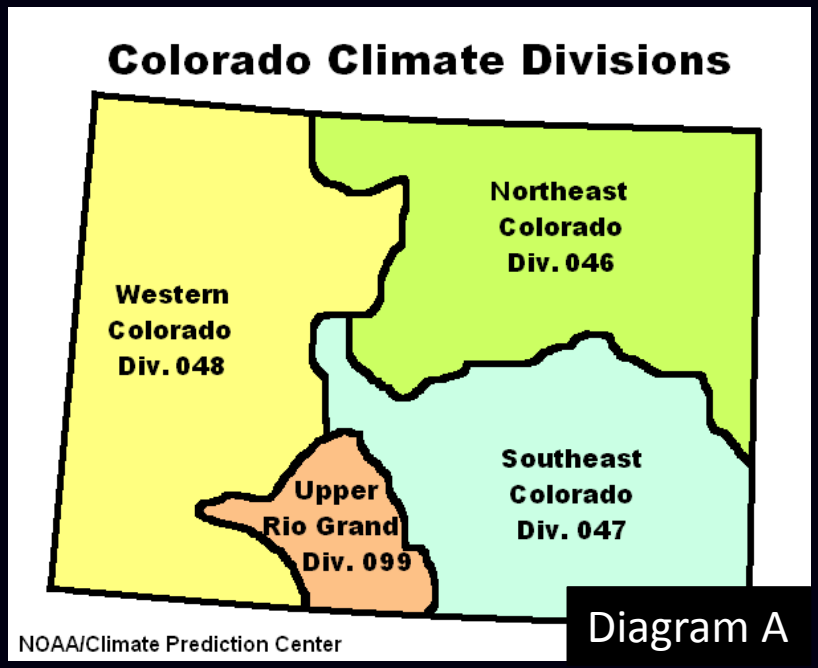


Diagram A

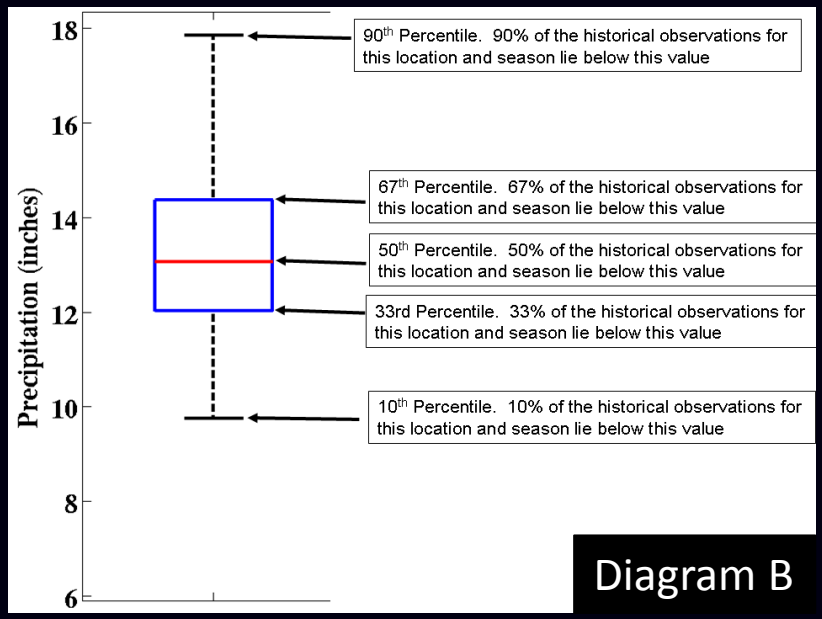


Diagram B

Interpreting ENSO Box and Whisker Plots

Diagram A is a map of the four climate mega-divisions in Colorado used by the Climate Prediction Center (CPC)—Divisions 046, 047,048 and 099.

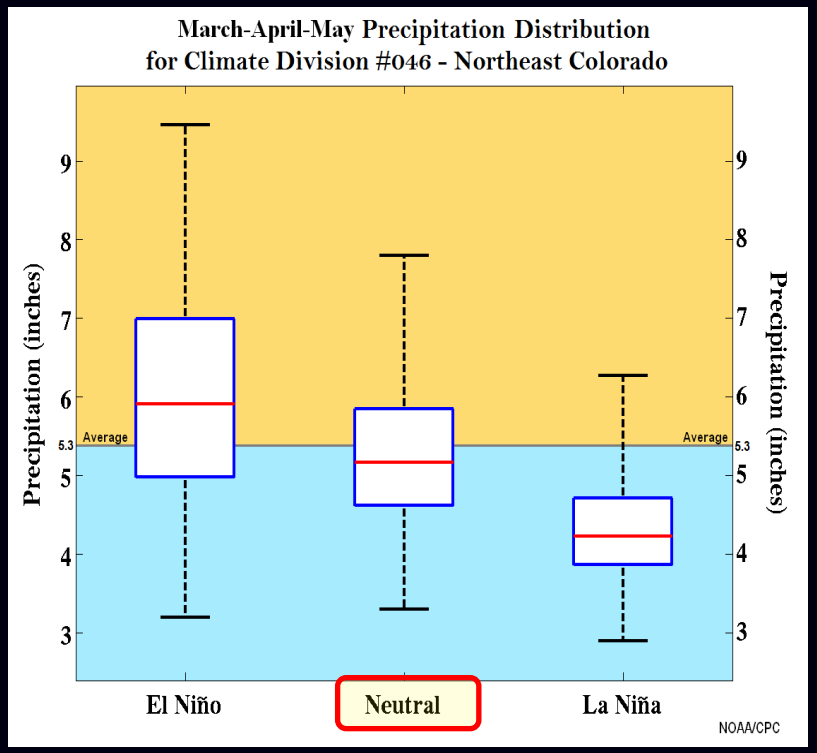
CPC has produced 3-month historical temperature and precipitation distribution plots for the three different ENSO categories –El Niño, La Niña and ENSO-neutral (non-ENSO) conditions for every climate mega-division in the United States.

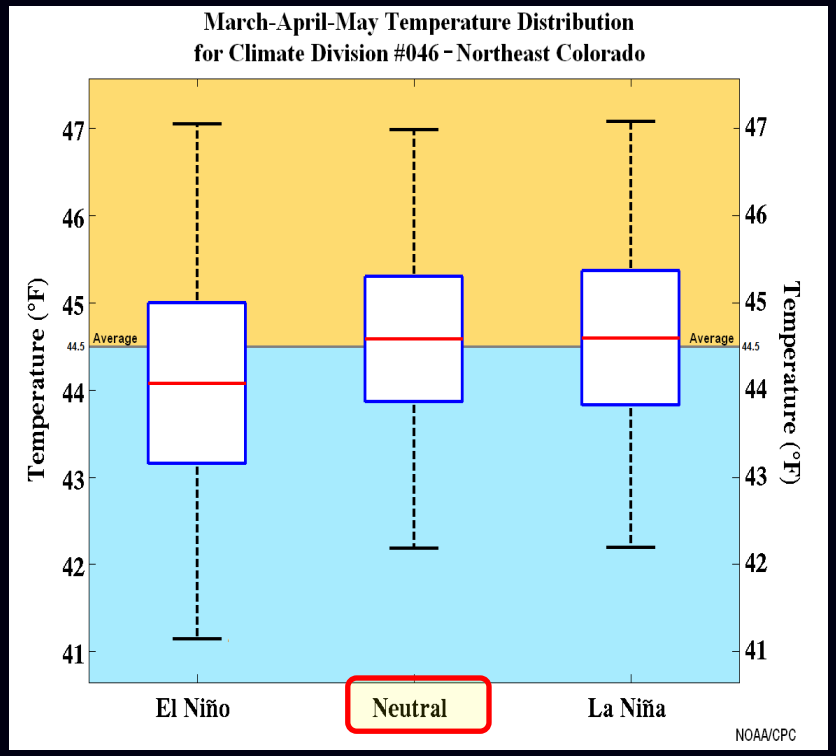
Diagram B is a description of the ENSO box and whisker analysis plot used by CPC to represent historical temperature and precipitation distributions for each ENSO category pertaining to each climate division.

The red line inside the ENSO box represents the mean or 50th percentile of the data (temperature or precipitation) distribution for each climate division. Approximately 34% of the total observations exist within the ENSO box, and the remaining observations (about 66%) lie outside of the box along the whiskers extending above and below the box.

It should be pointed out that the following temperature and precipitation distributions do not differentiate between El Niño and La Niña events of weak, moderate and strong intensity.

Precipitation and Temperature Composites (ENSO Box and Whisker Analysis Plots) for the Northeast Colorado Climate Division #046 for March-April-May

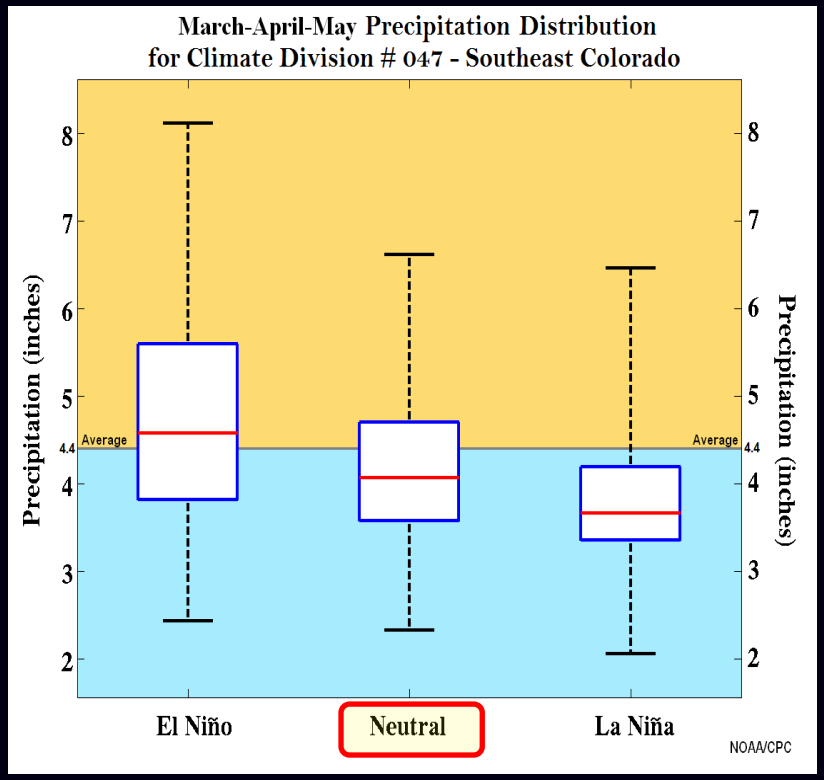


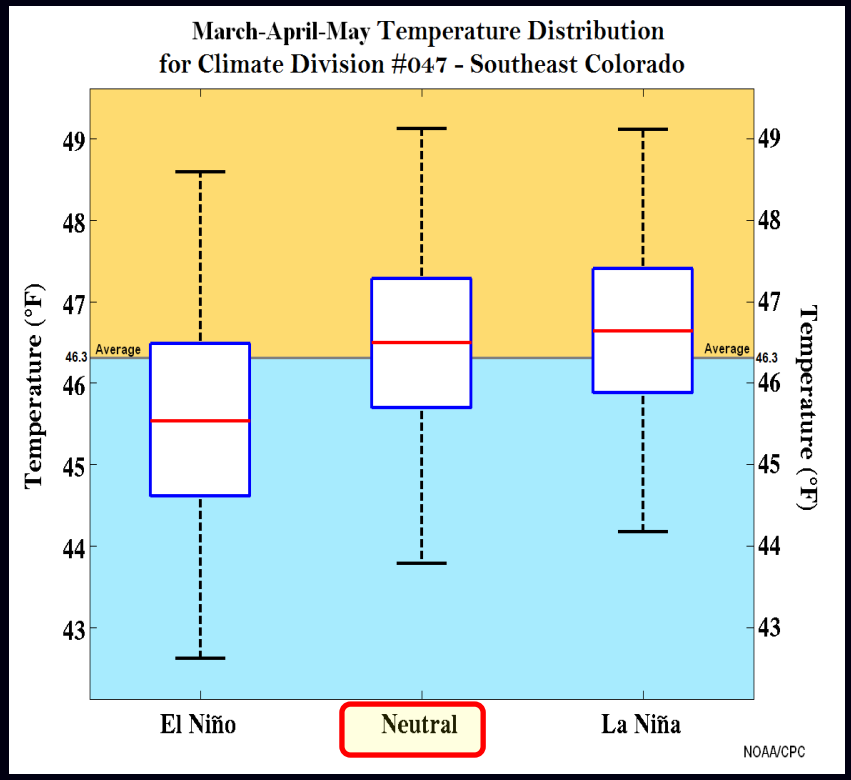


Historically, precipitation in northeast Colorado during March through May has been ***near to slightly below average during neutral-ENSO conditions,*** above average during El Niños, and below average during La Niñas.

During the same three month period, temperatures in the past have been ***near average during neutral-ENSO*** and La Niña cycles, and below average during El Niño events.

Precipitation and Temperature Composites (ENSO Box and Whisker Analysis Plots) for the Southeast Colorado Climate Division #047 for March-April-May

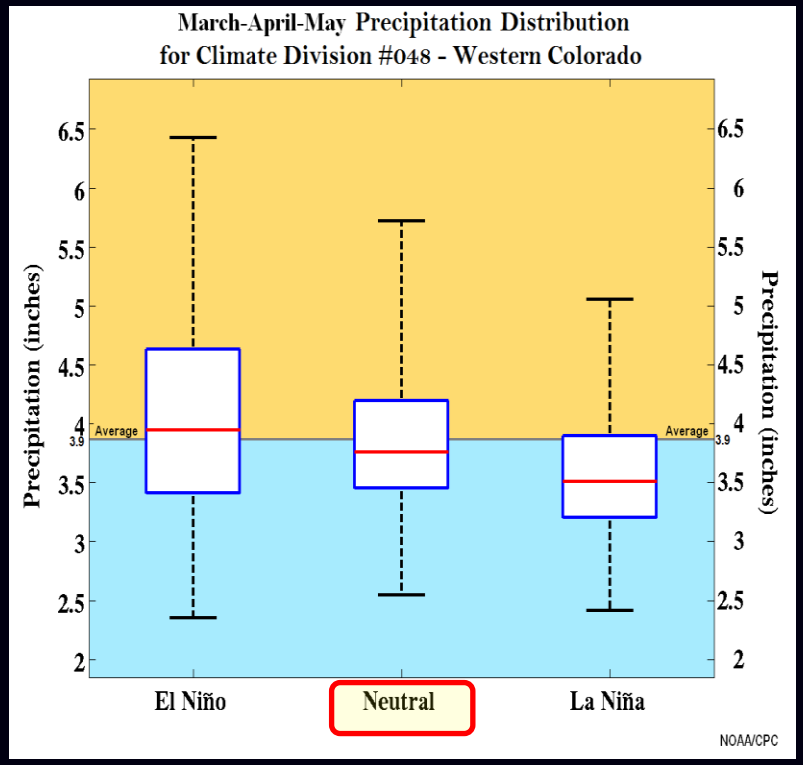


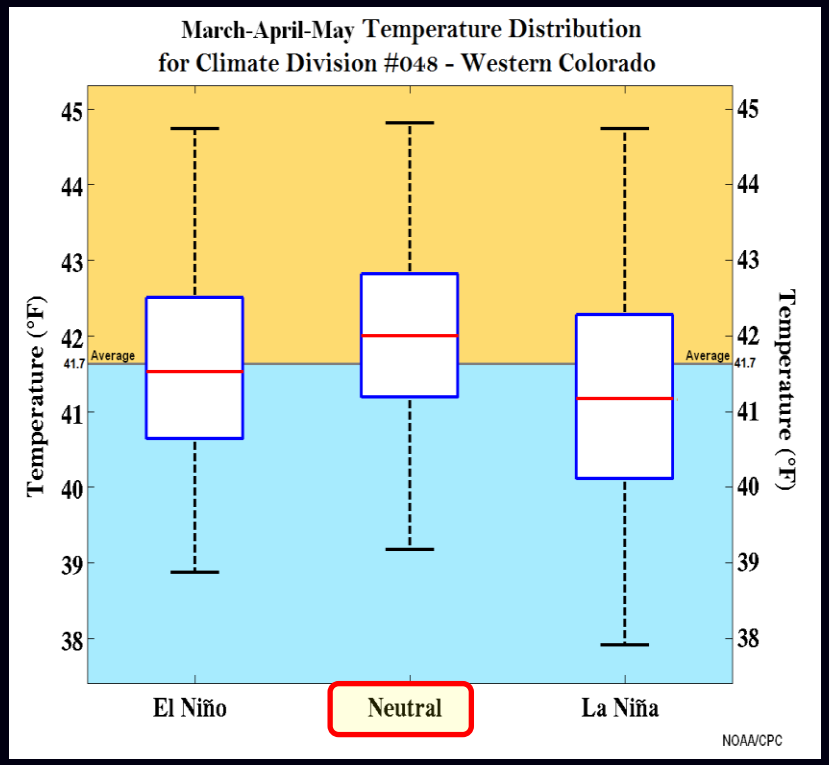


Precipitation in southeast Colorado during the climate season March through May historically has been ***near to slightly below average during neutral-ENSO conditions,*** near to above average during El Niños, and below average for La Niñas .

For the same three month period, temperatures in southeast Colorado have been ***near to slightly above average during past ENSO-neutral and La Niña cycles,*** and below average during past El Niños.

Precipitation and Temperature Composites (ENSO Box and Whisker Analysis Plots) for the Western Colorado Climate Division #048 for March-April-May





Precipitation in western Colorado during March-May historically was ***near to slightly below average during neutral-ENSO cycles***, near to slightly above average during El Niños, and below average during La Niñas.

Finally, temperatures during the same three month period have been ***near to slightly above average during ENSO-neutral*** conditions, near average during El Niños, and below average during past La Niñas.

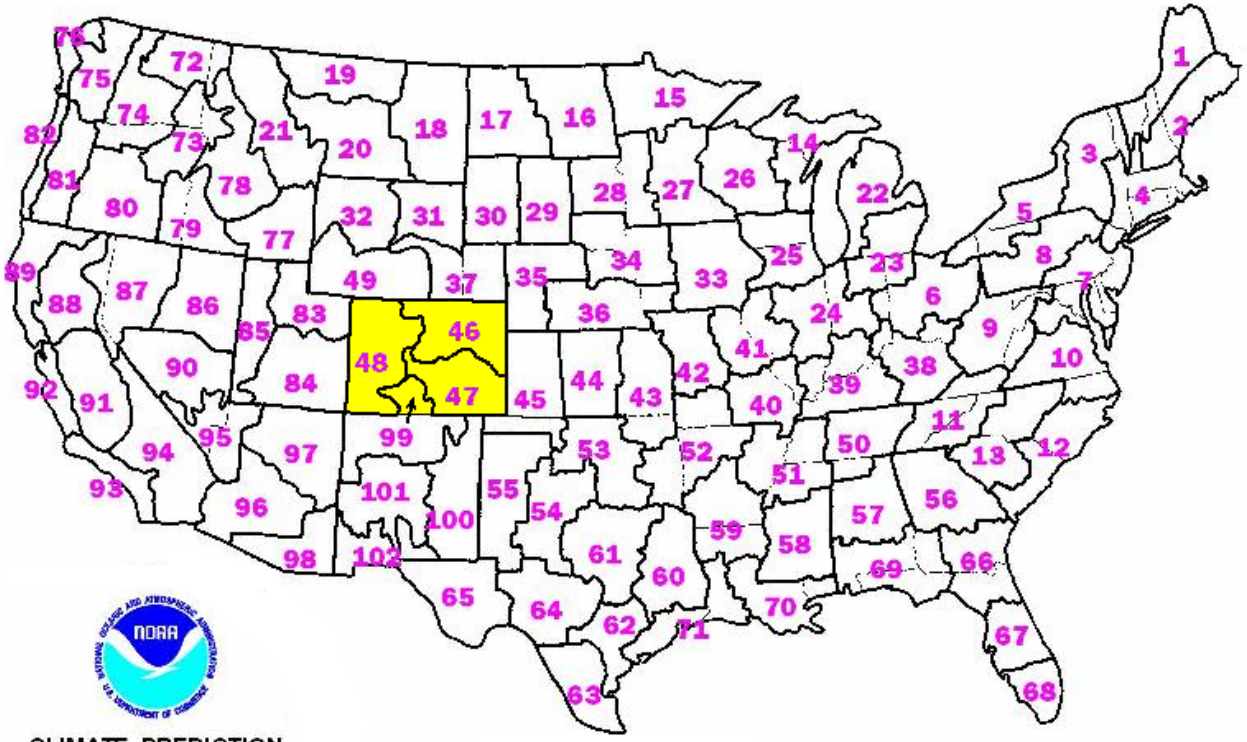
March-April-May 2013 Temperature and Precipitation Outlooks for Colorado Issued by the Climate Prediction Center

Climate Prediction Center Seasonal Outlooks

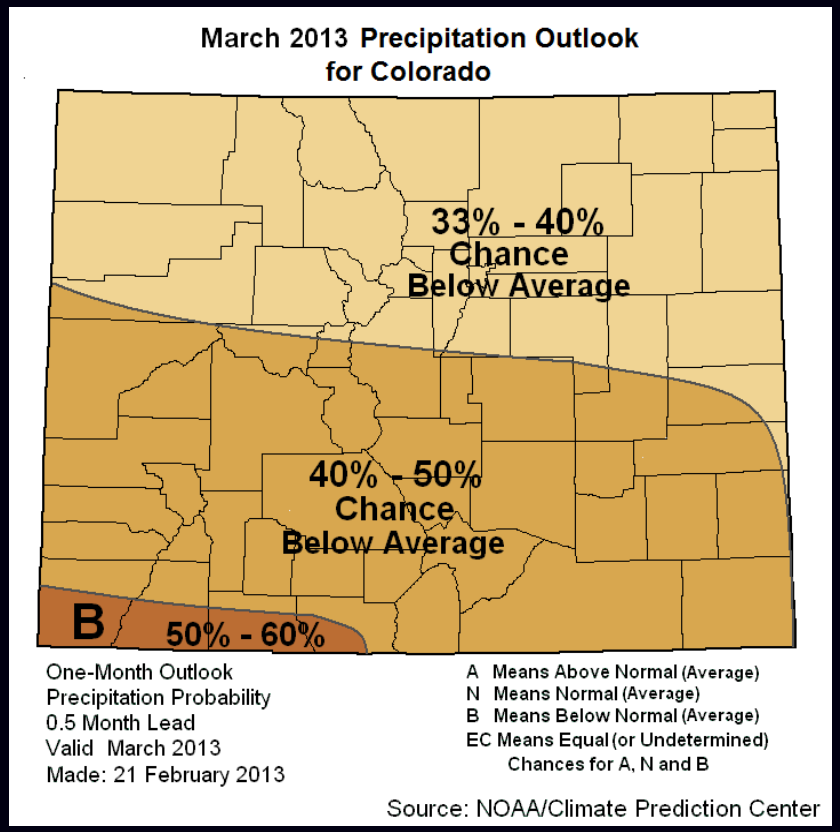
The National Weather Service Seasonal Climate Outlooks predict the probability of conditions being among the warmest/coldest or wettest/driest terciles of years compared to the period of record 1981-2010.

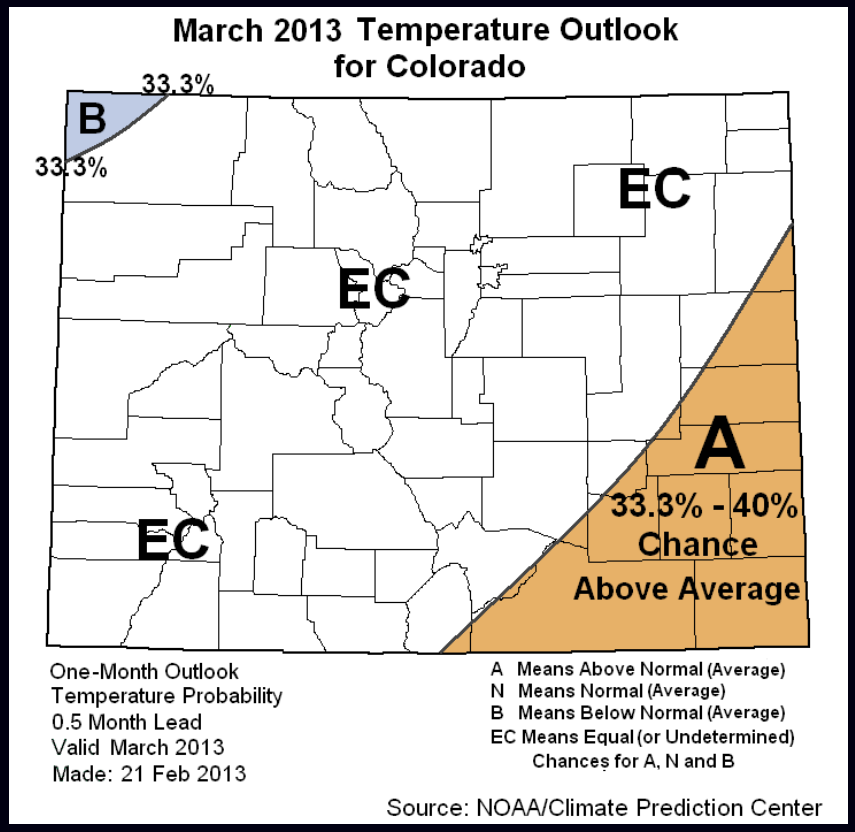
The outlooks indicate probability of being in three specific categories in reference to the 30-year climatology from 1981-2010. They are above, below and average.

Remember, Climate Predicition Center (CPC) outlooks are made at the scale of the climate megadividions (see the map below).



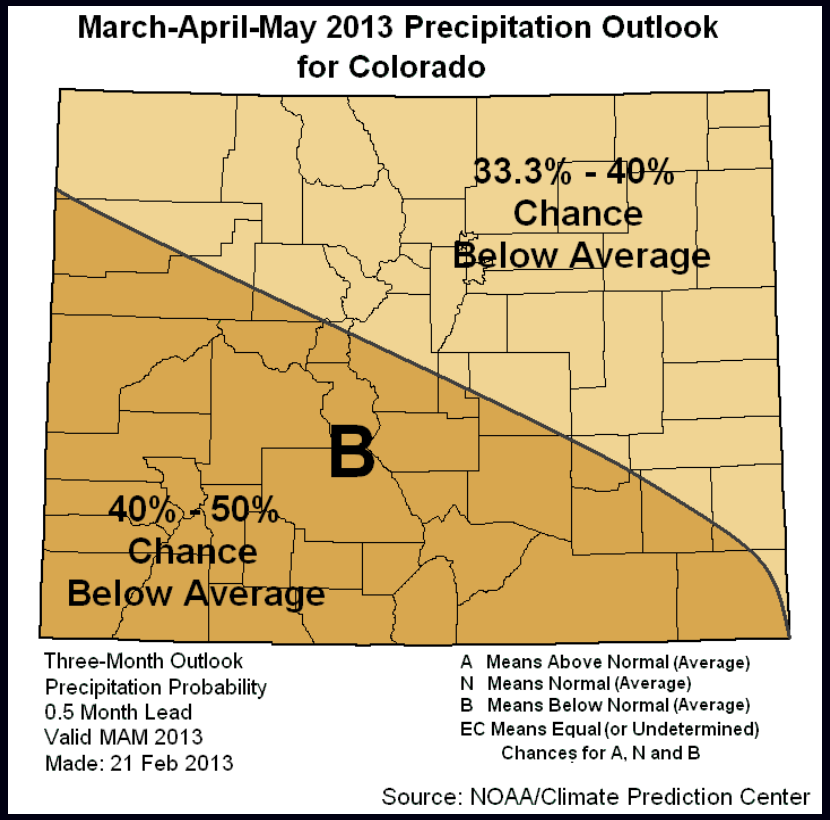
CLIMATE PREDICTION CENTER

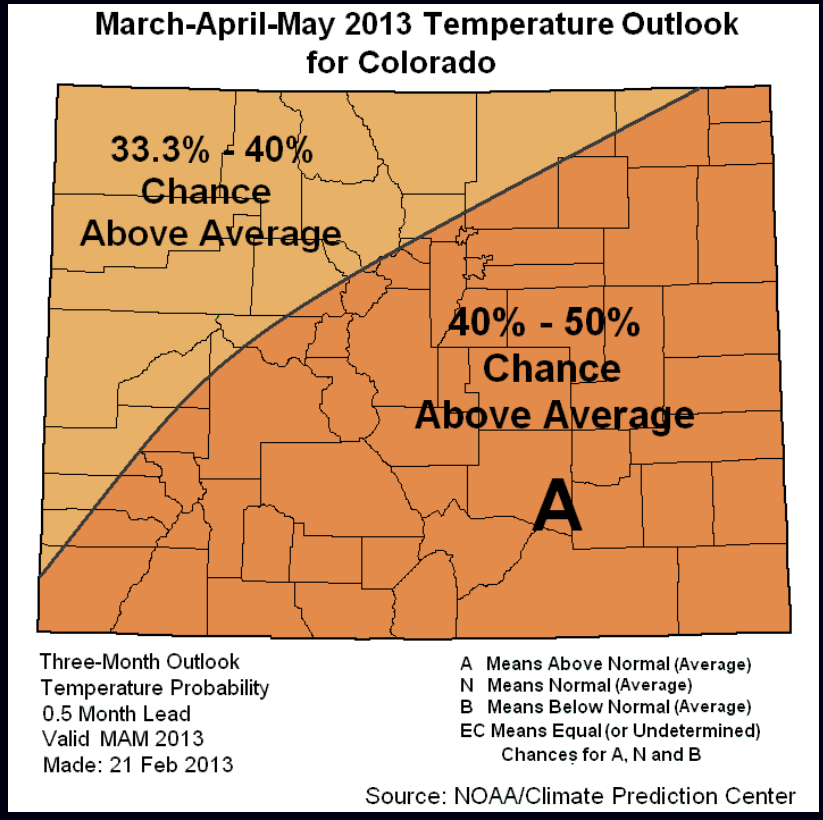




NOAA's Climate Prediction Center (CPC) is calling for at least a 33.3 percent chance of below average precipitation across Colorado during the month of March. The odds of this occurring are greatest across southwest sections of the state.

The CPC is predicting a 33.3 to 40 percent chance of above average temperature across the southeast corner of Colorado, and a 33.3 to 40 percent chance of below average temperature for the far northwest corner of the state during March 2013. The remainder of Colorado has an equal or undeterminable chance (EC) for above, below and near average temperature during the month.





For the period March-May 2013, CPC is calling for a 33.3 to 40 percent chance of below average precipitation across the northeast of Colorado and an even better chance (40 to 50 percent) for less than average precipitation for the remainder of the state.

Lastly, the outlook for March-May 2013, is for a 33.3 to 40 percent chance of above average temperature across roughly the northwest one-third of Colorado, and 40 to 50 percent chance of above average temperature for the remaining two-thirds of the state.